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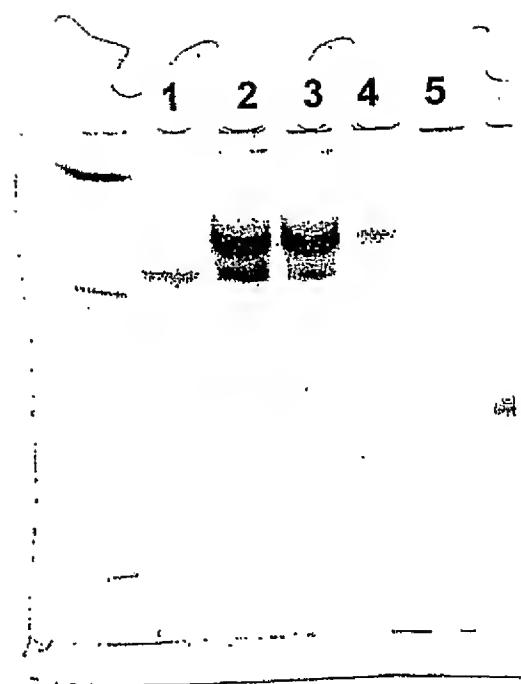


FIG. 157

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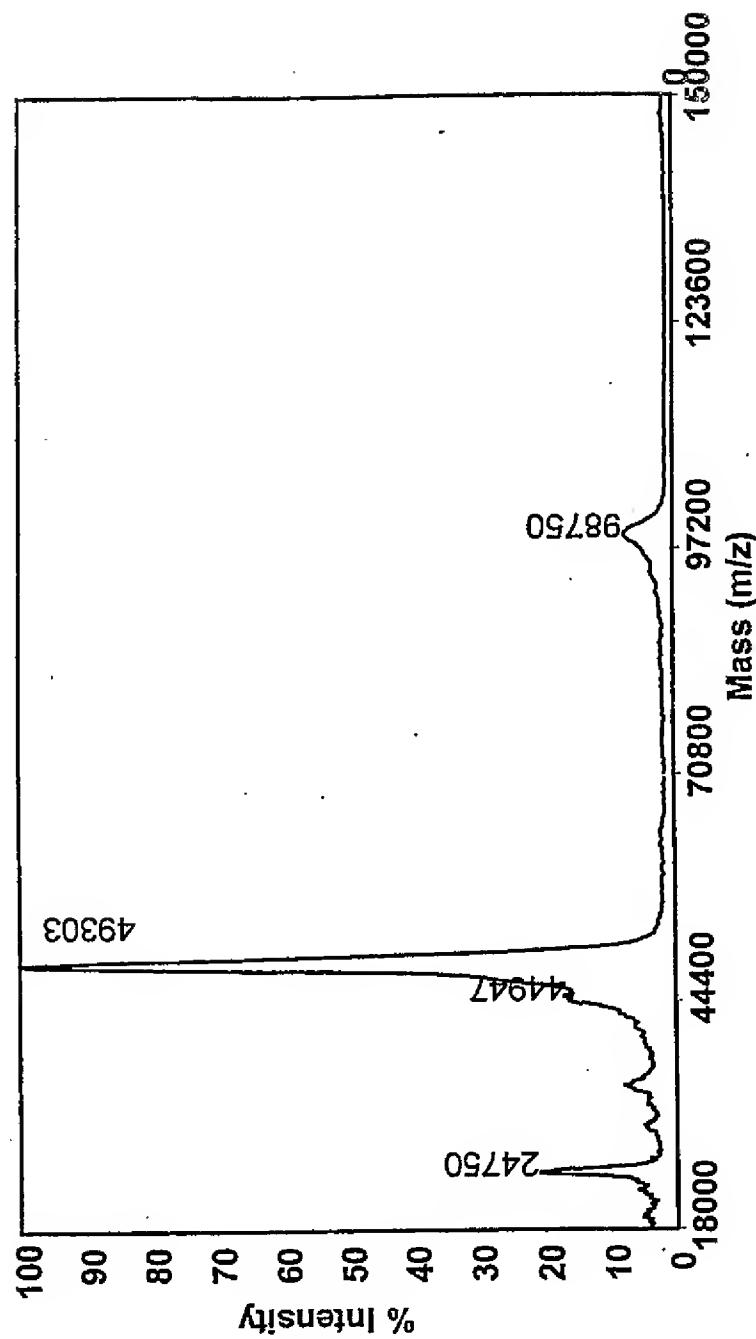


FIG. 158

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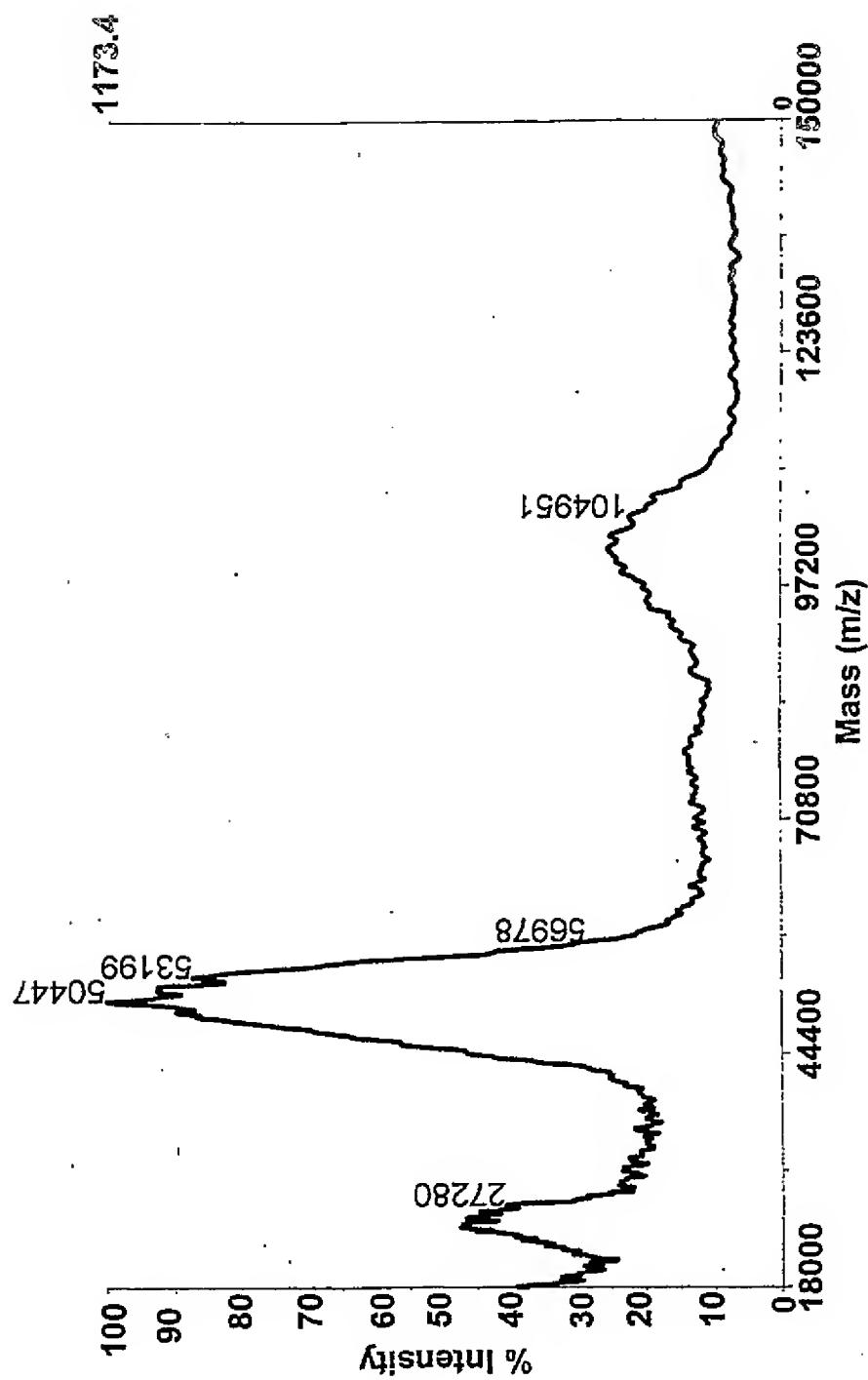


FIG. 159

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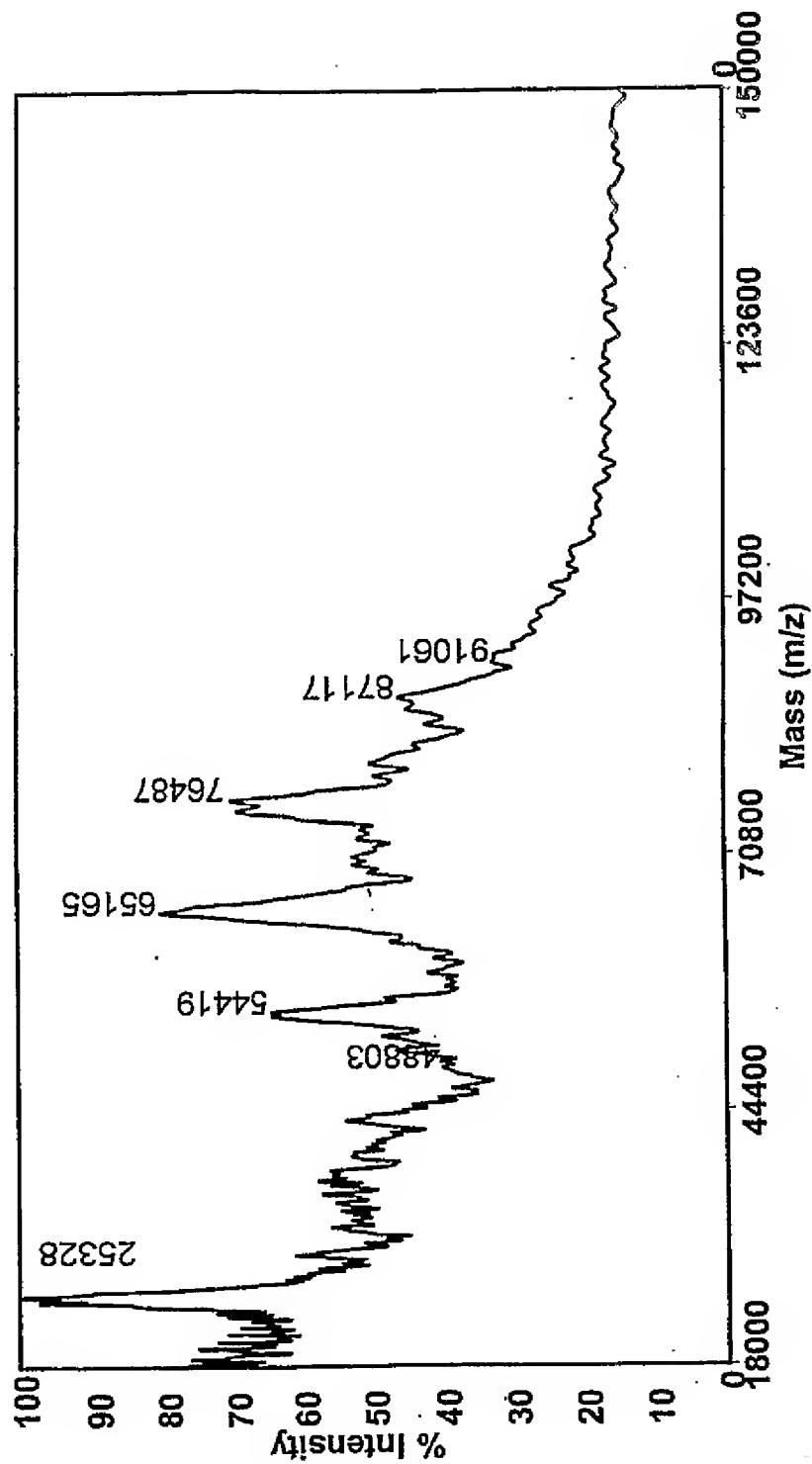


FIG. 160

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FIG. 161

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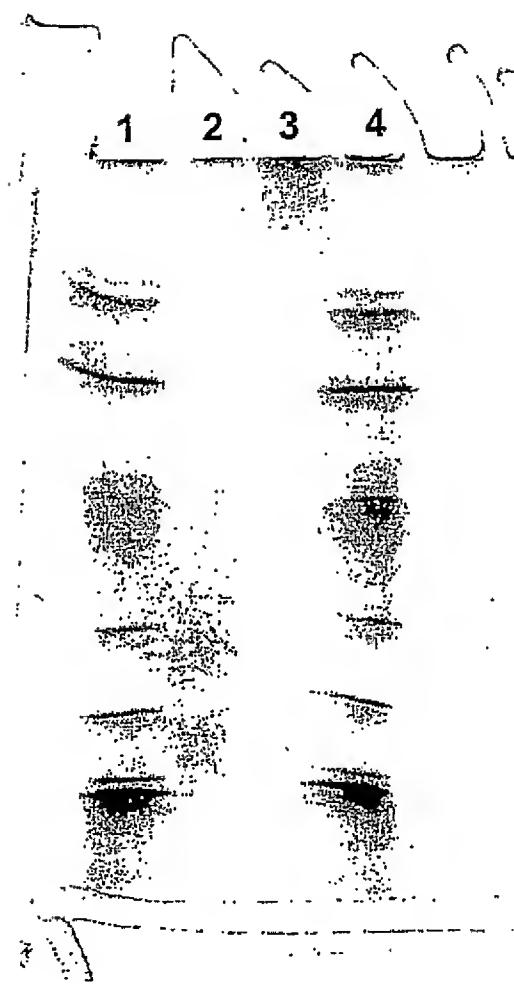


FIG. 162

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1 2 3 4 5 6 7 8

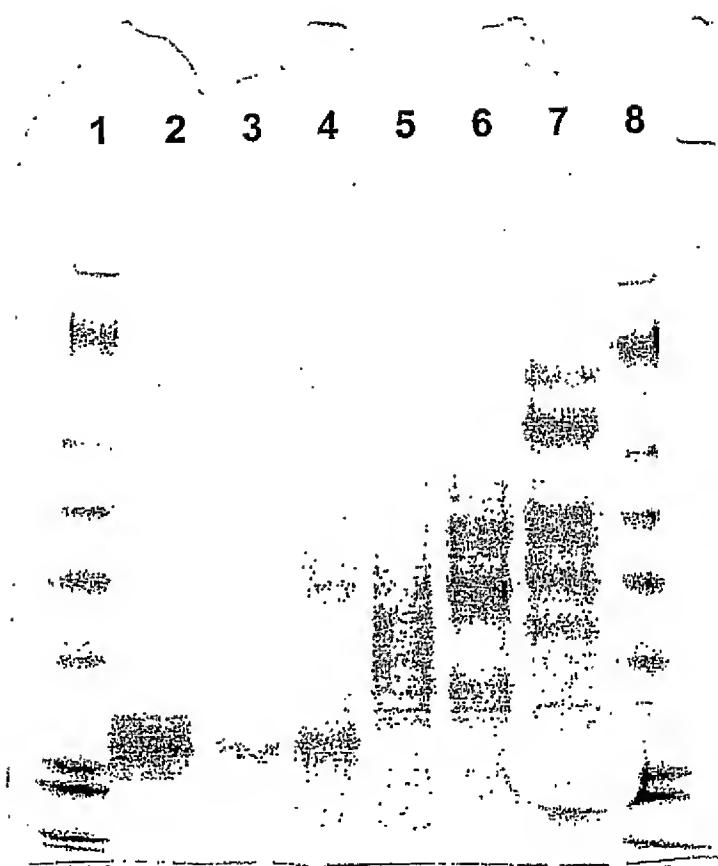


FIG. 163

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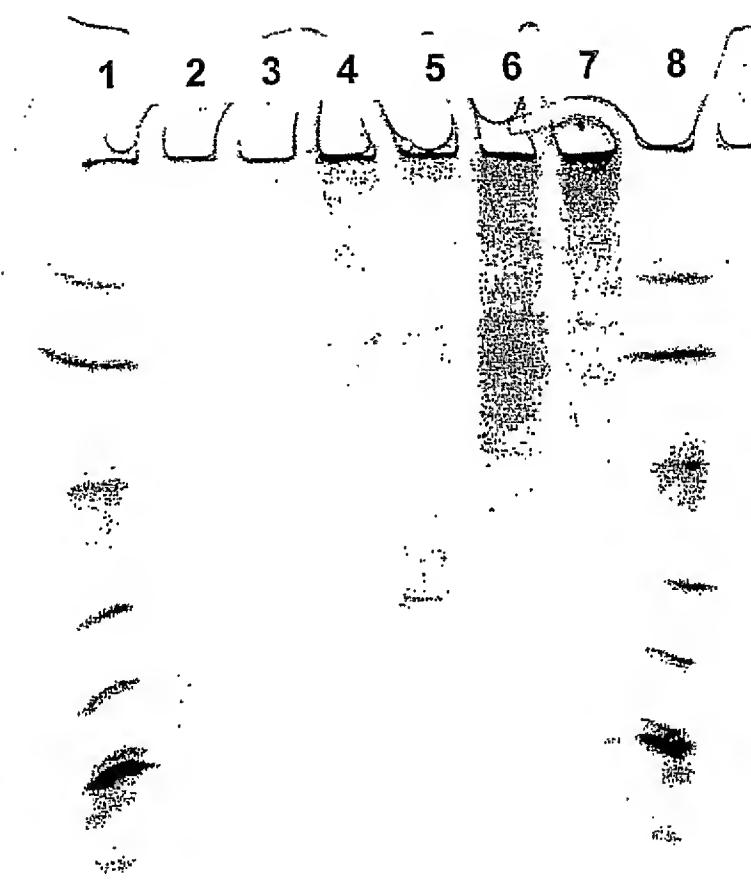


FIG. 164

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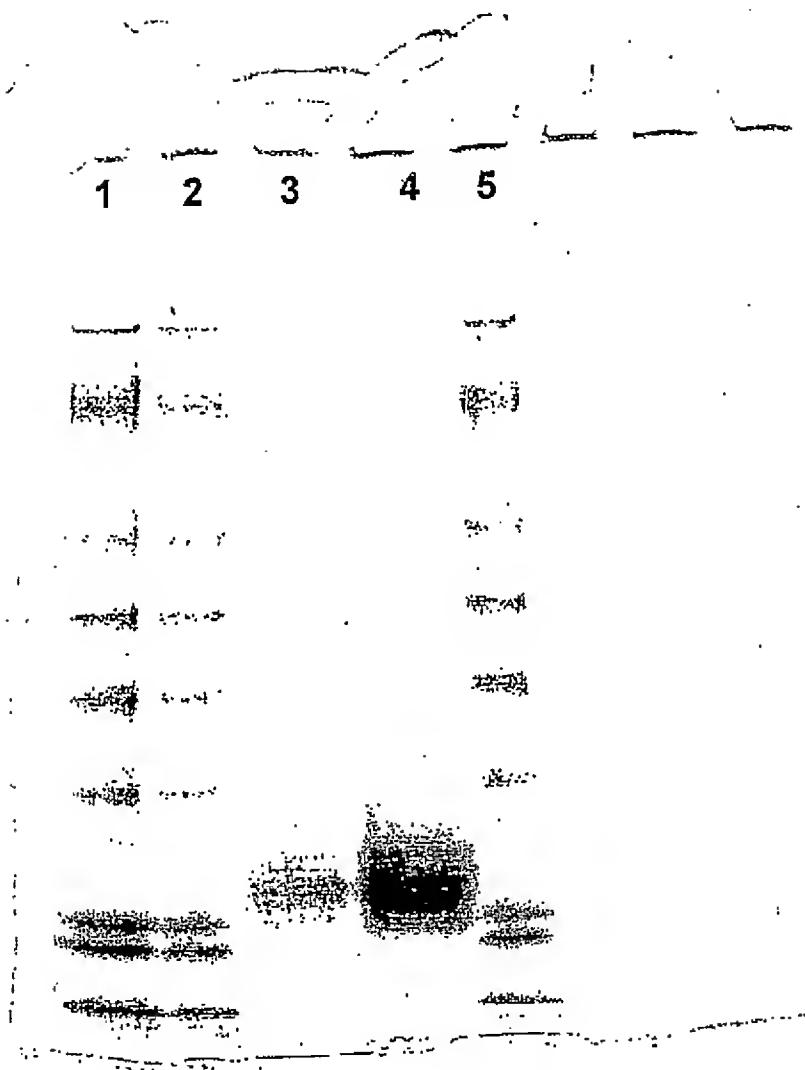


FIG. 165

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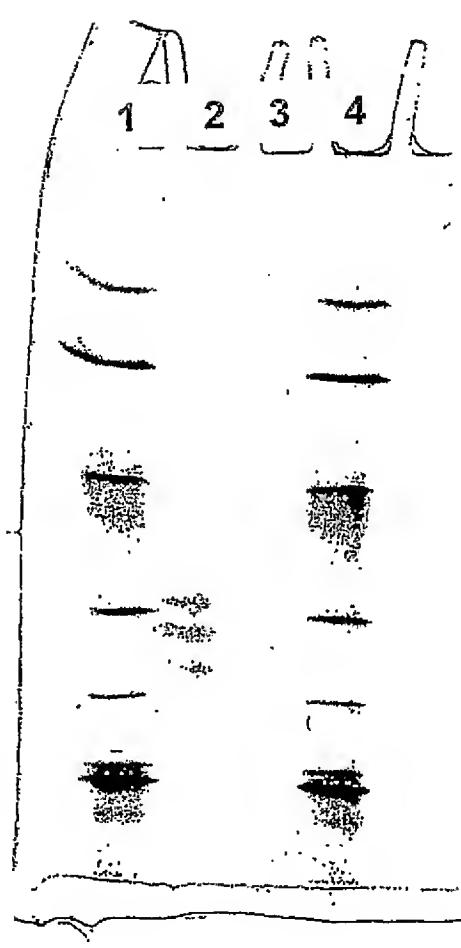


FIG. 166

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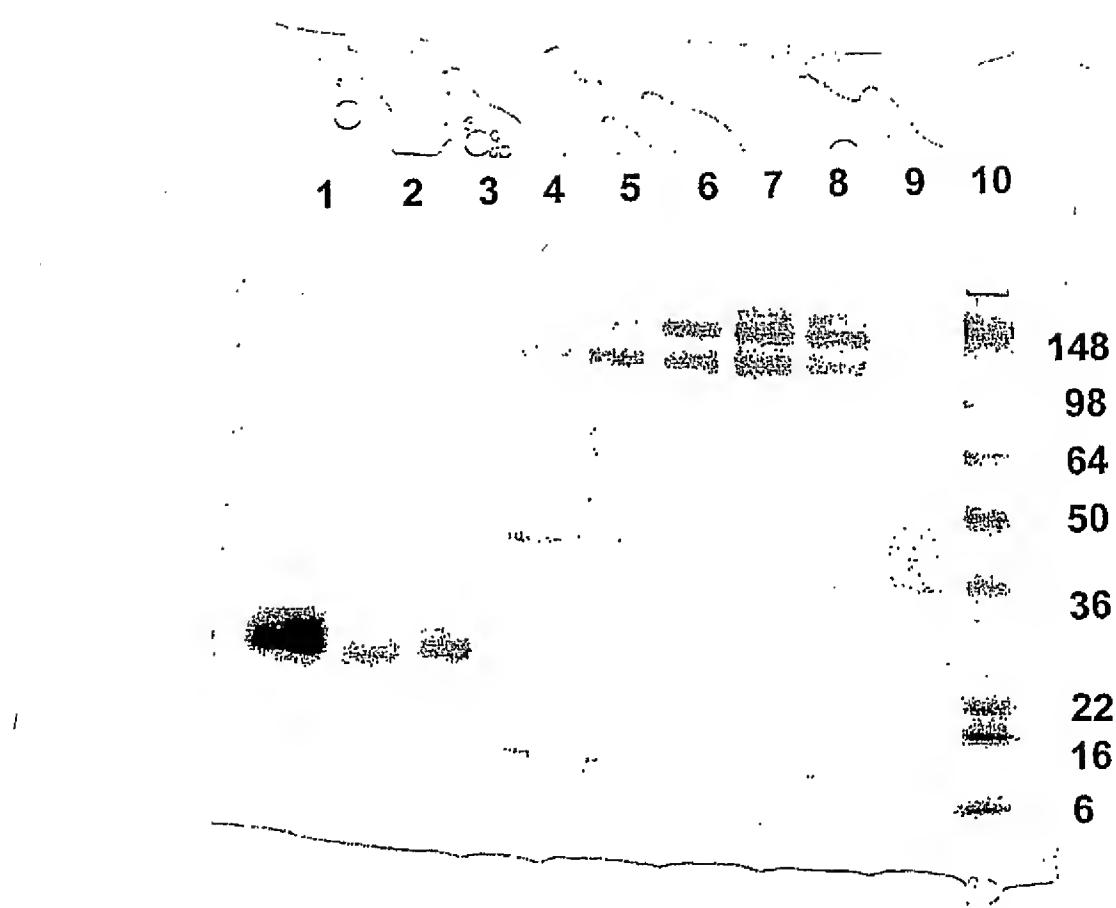


FIG. 167

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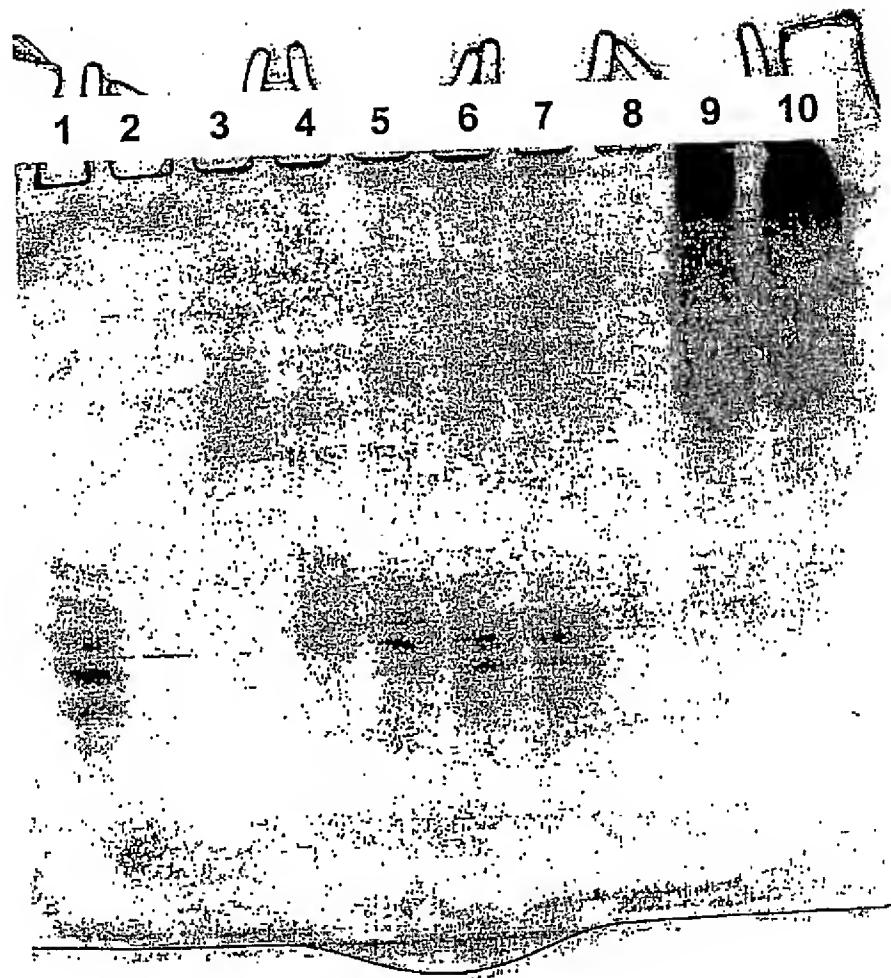


FIG. 168

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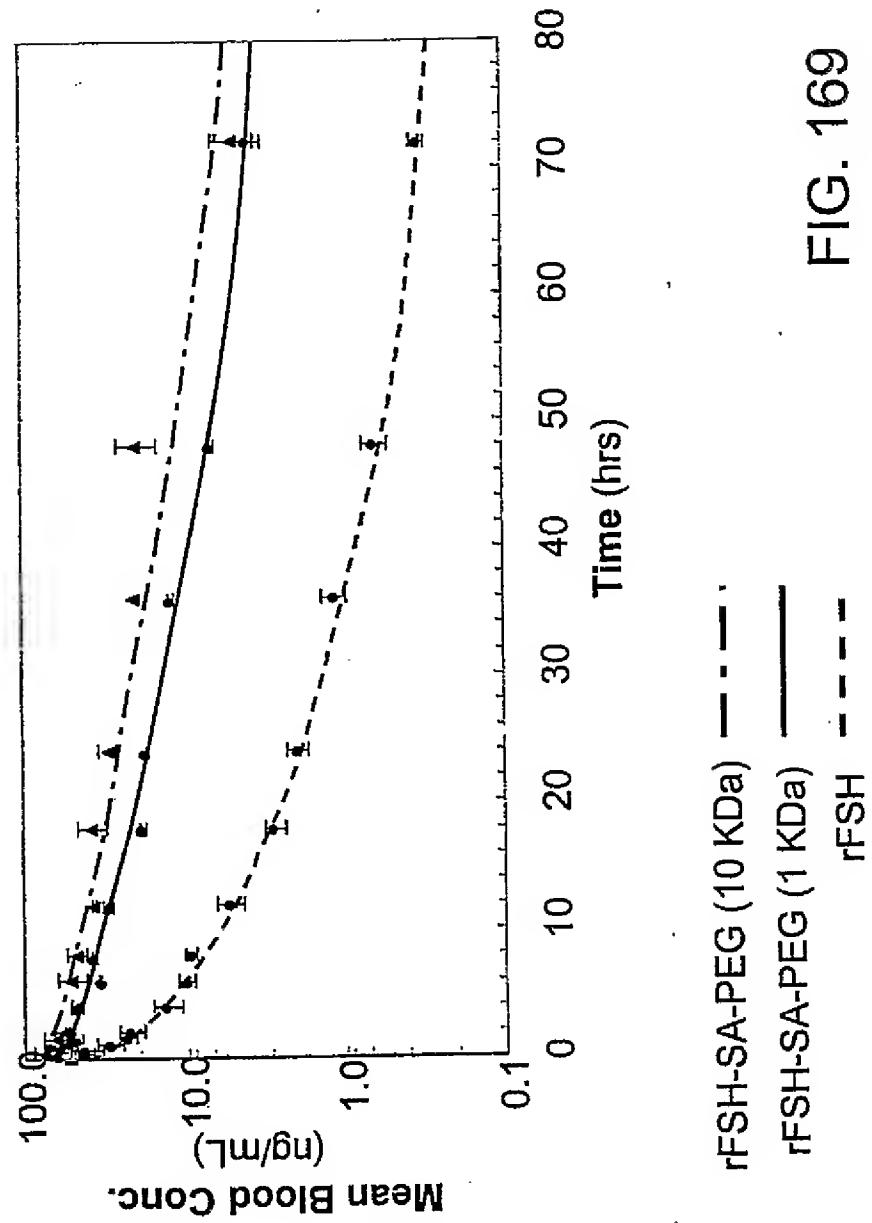


FIG. 169

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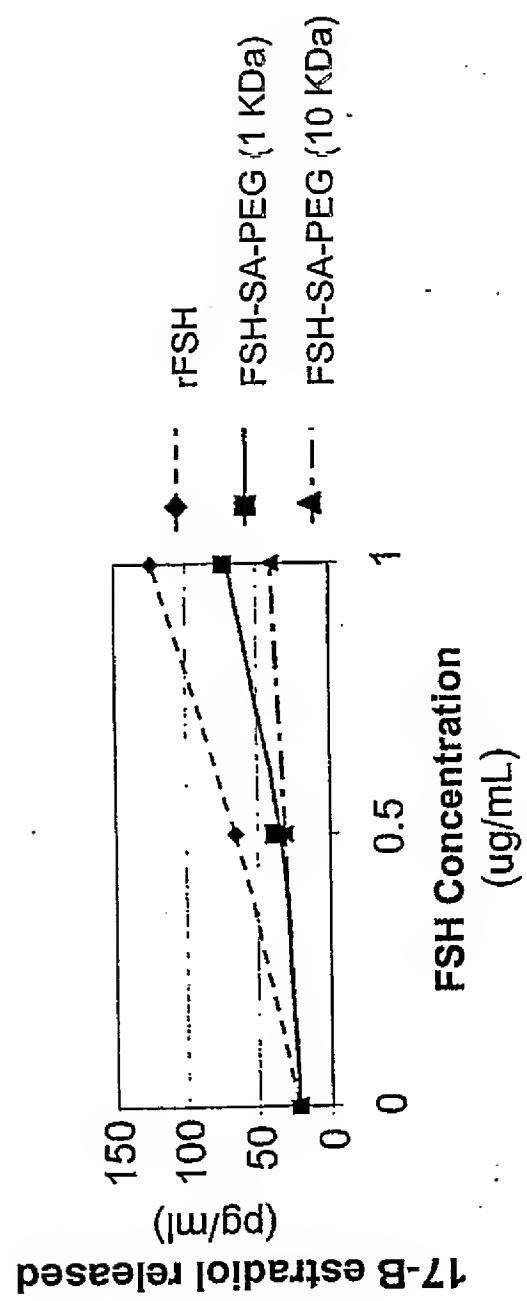


FIG. 170

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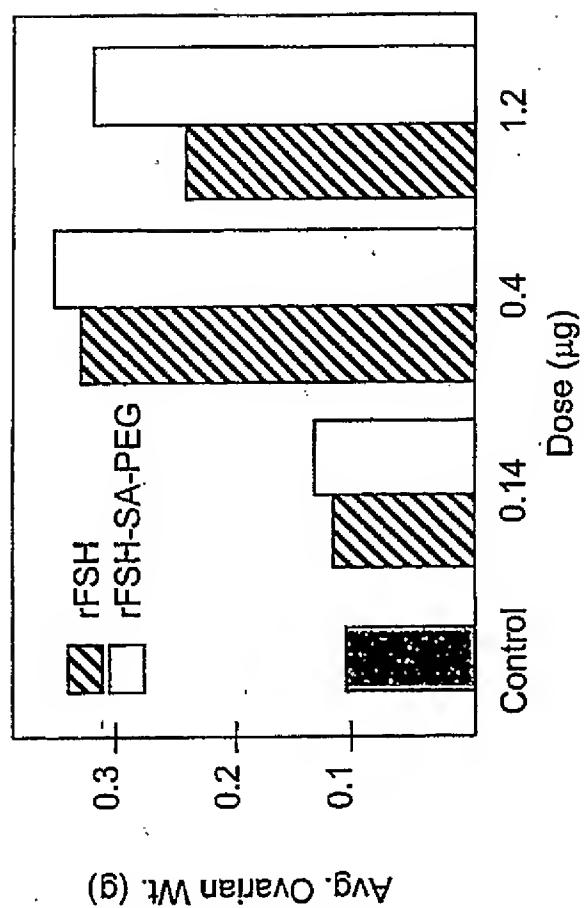


FIG. 171

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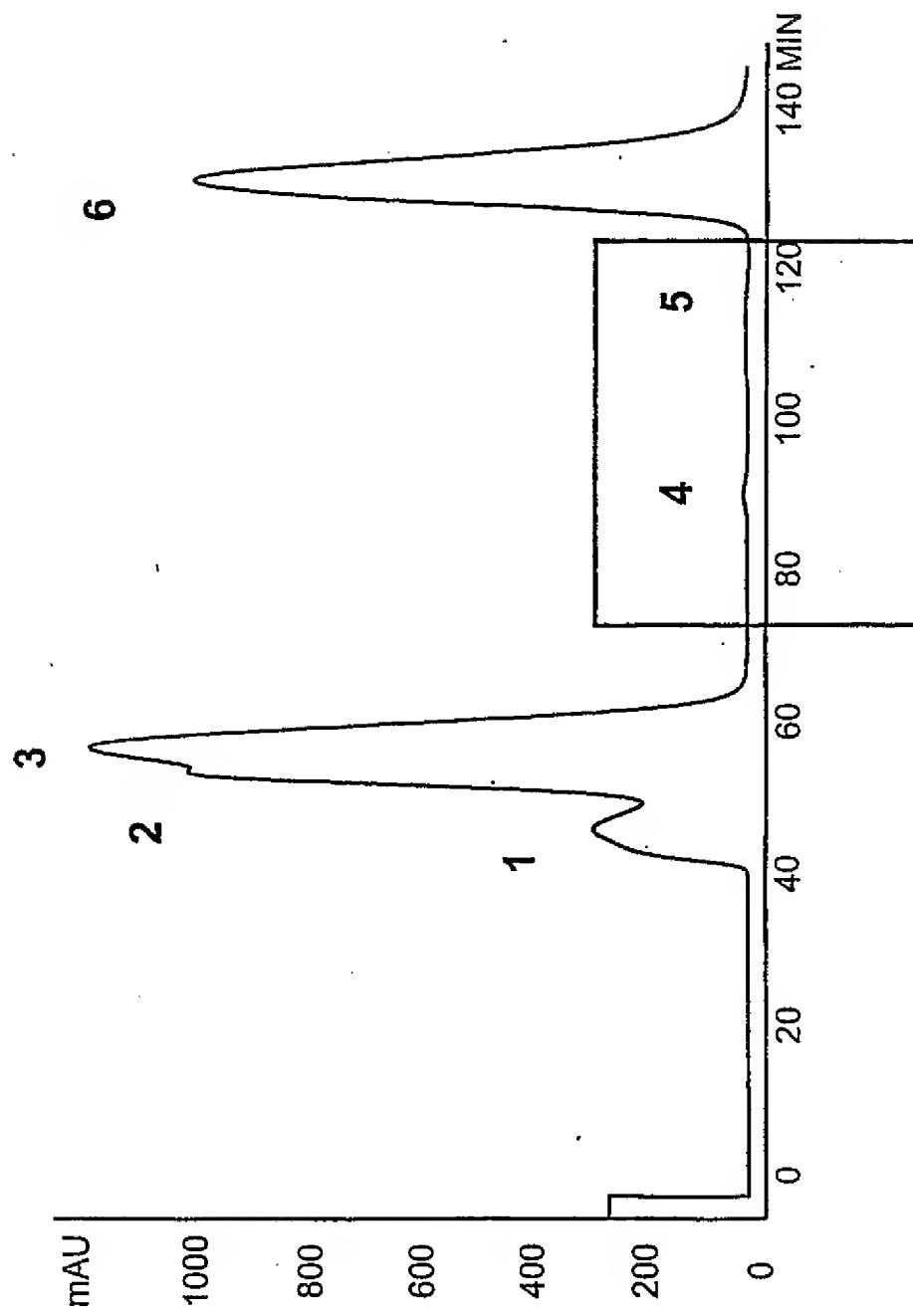


FIG. 172A

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FIG. 172B

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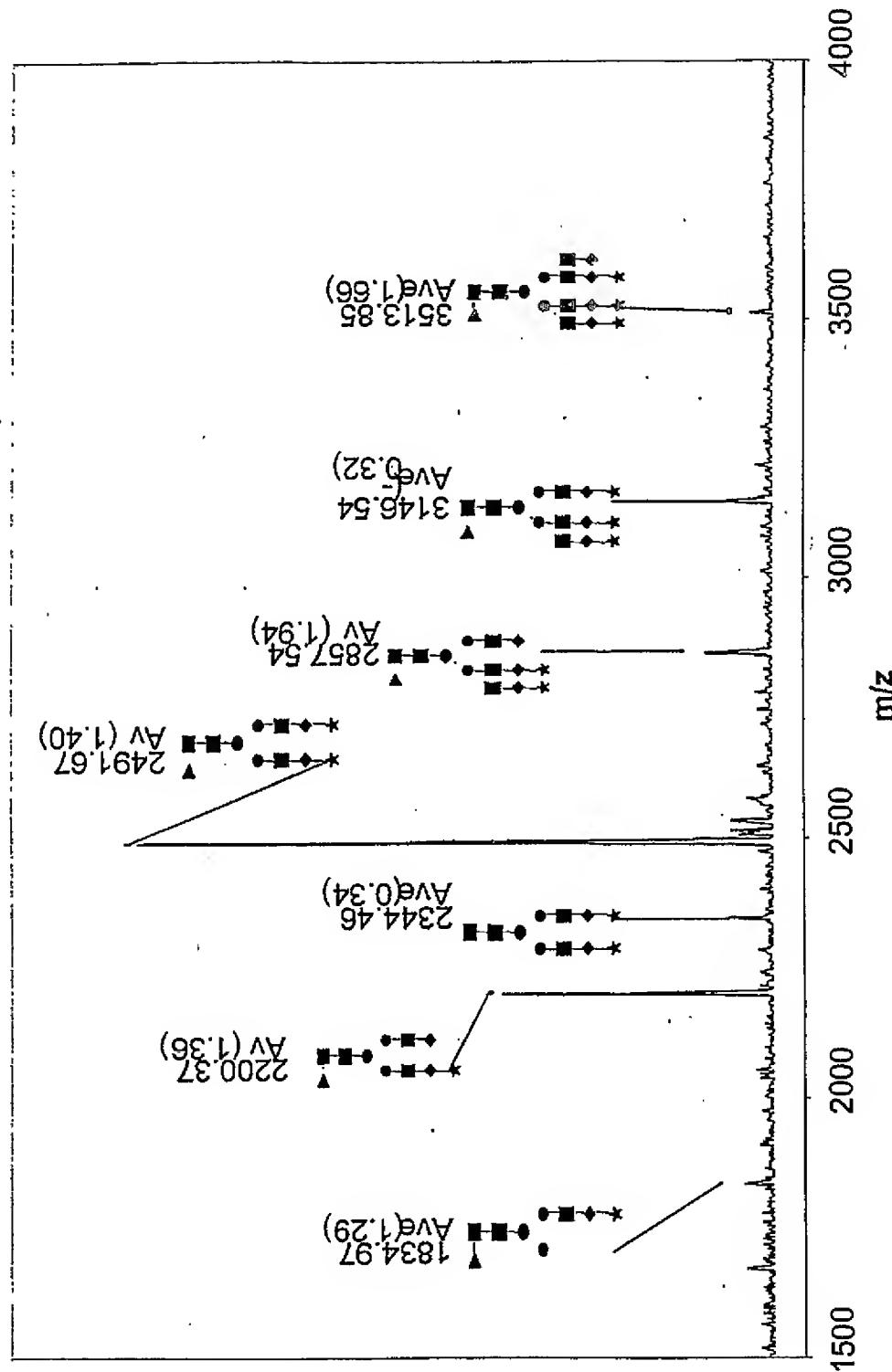


FIG. 173A

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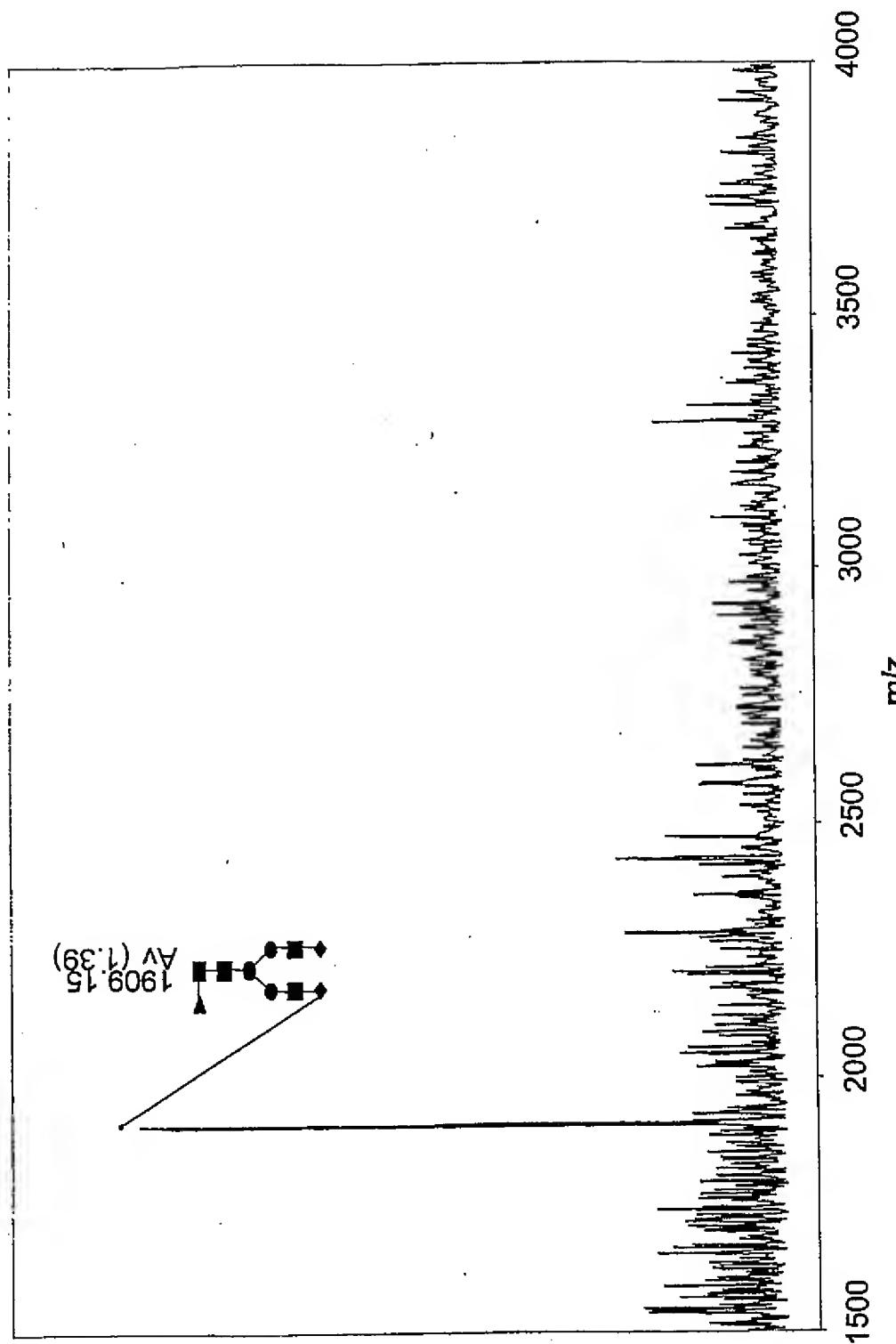


FIG. 173B

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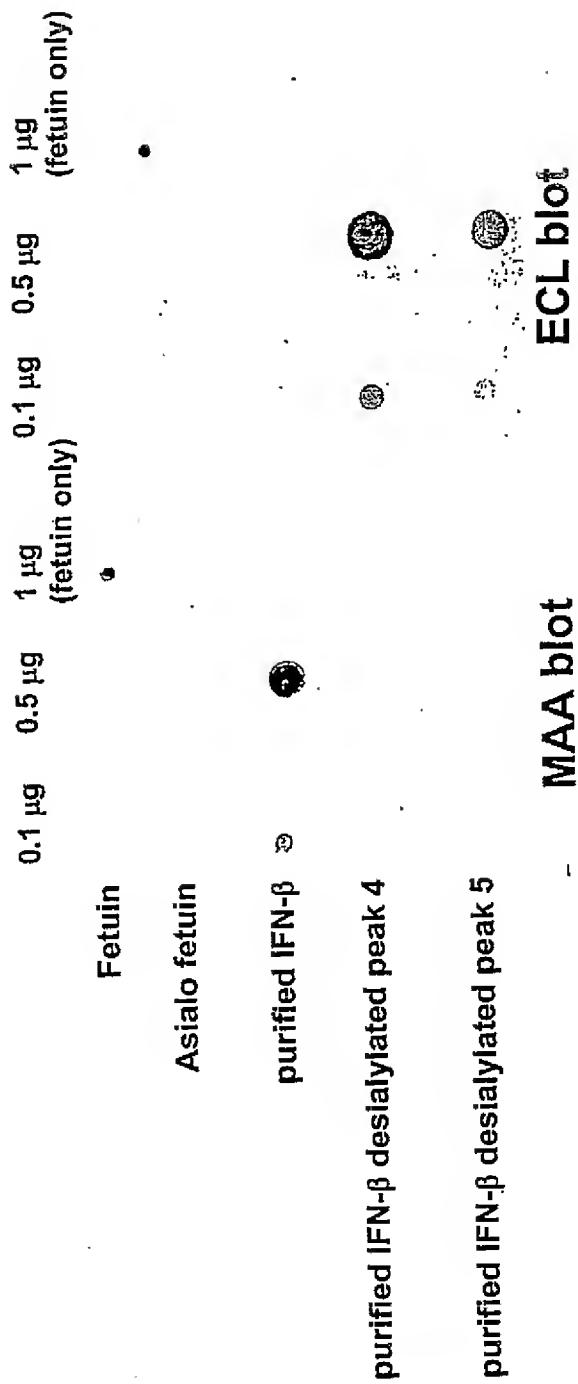


FIG. 174

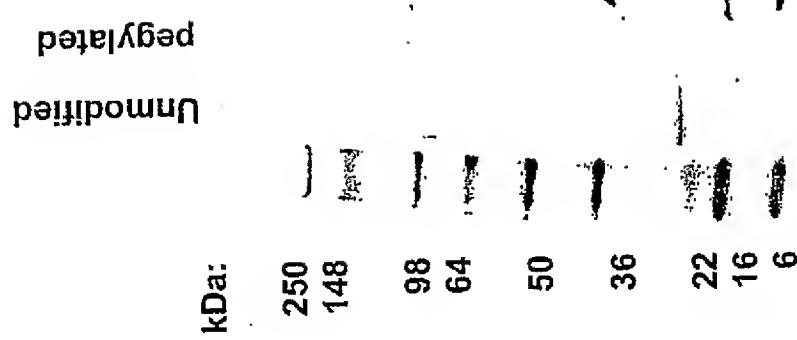
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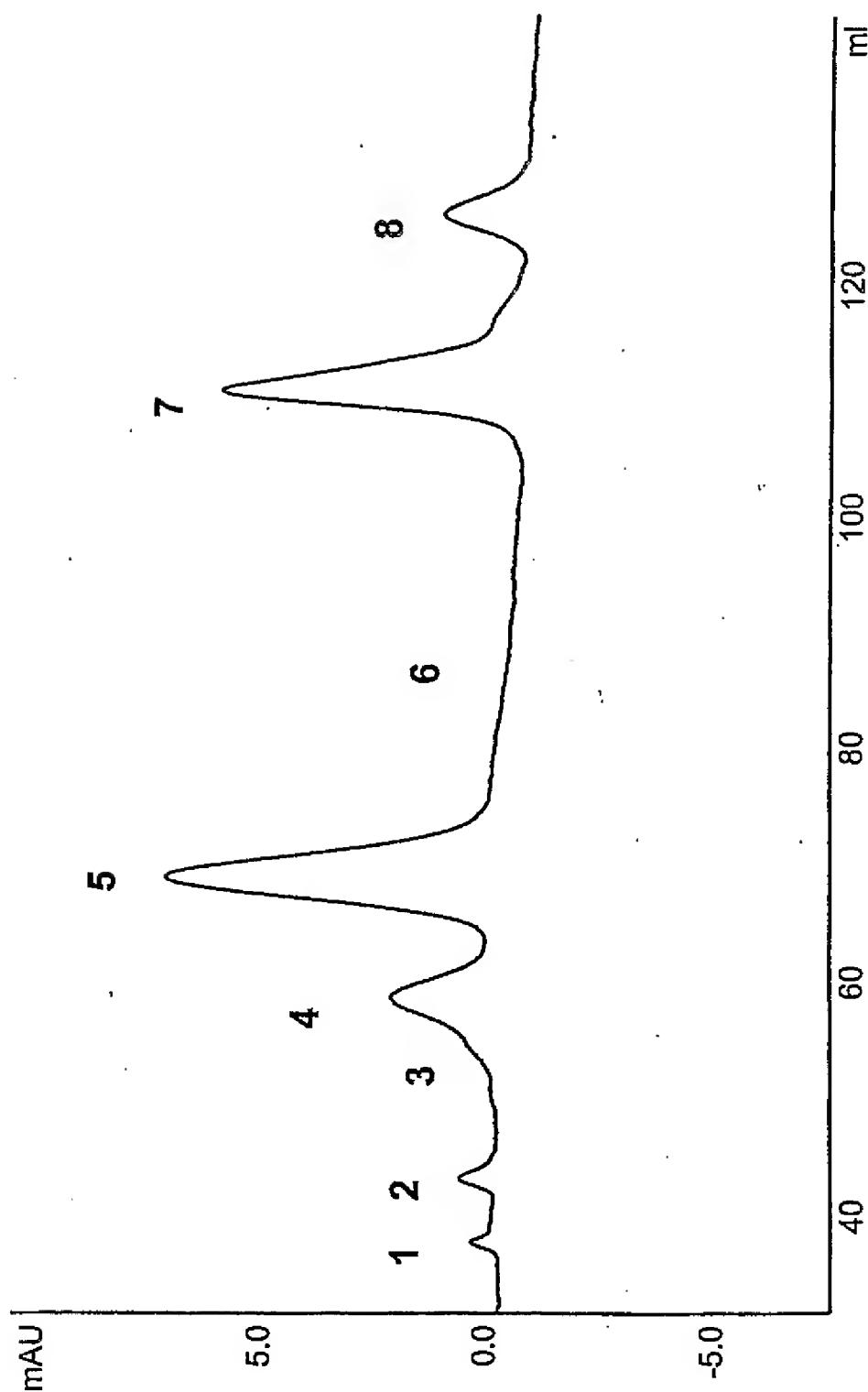
FIG. 175

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FIG. 176



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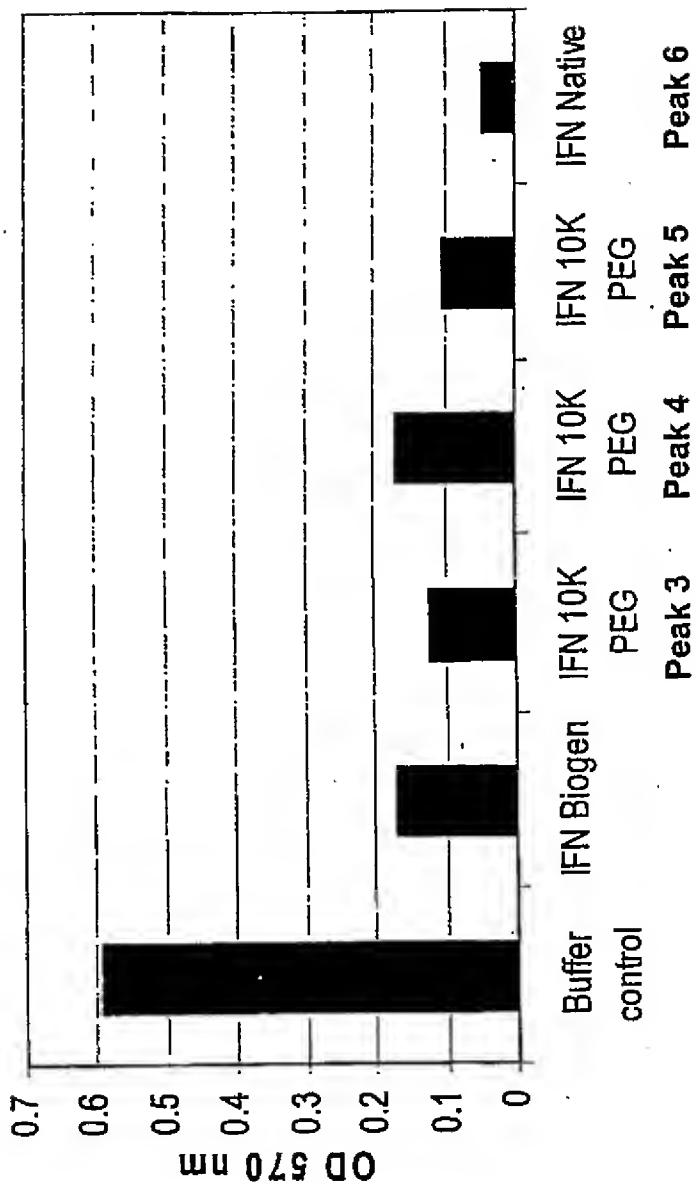


FIG. 178

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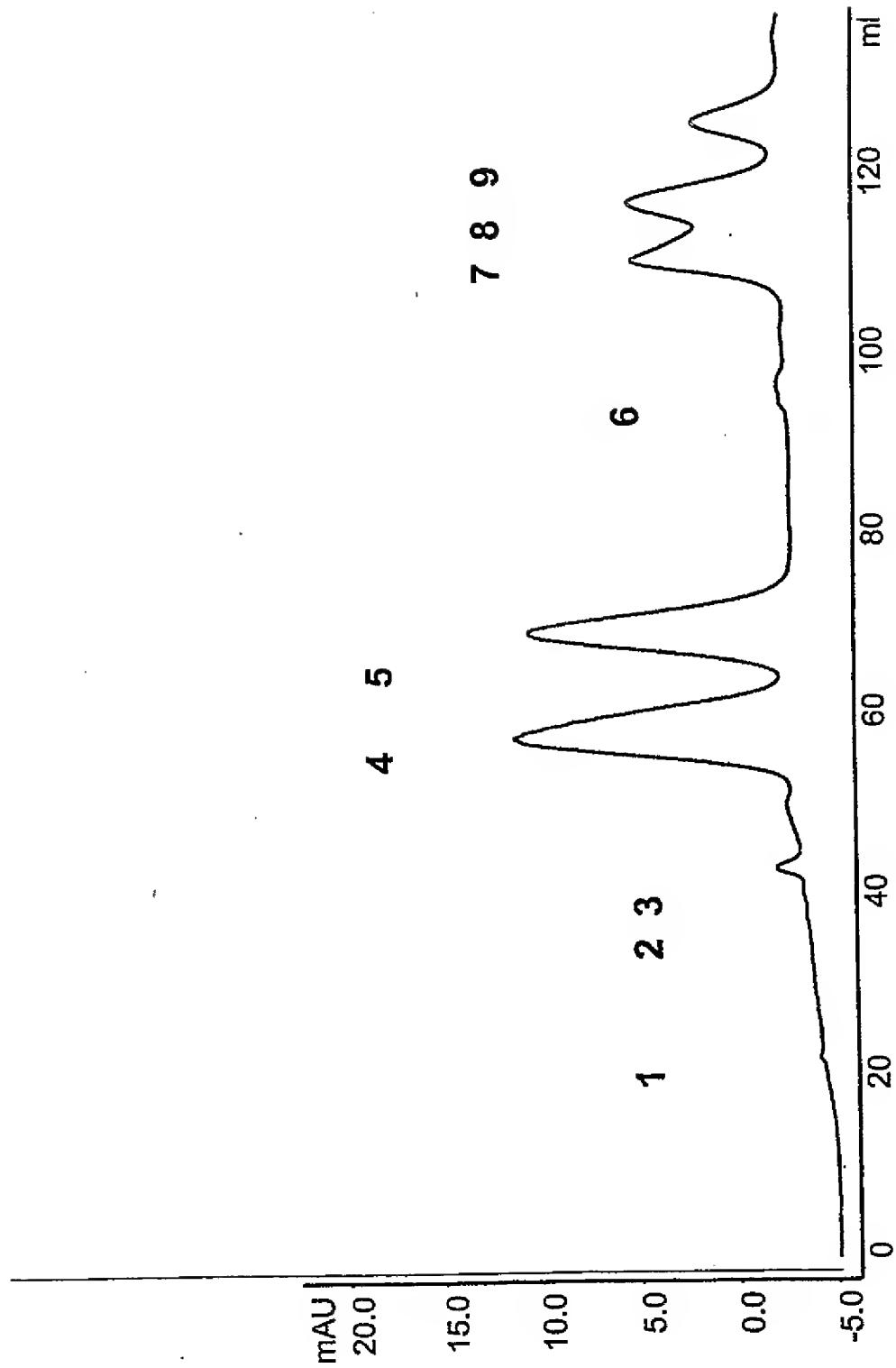


FIG. 179

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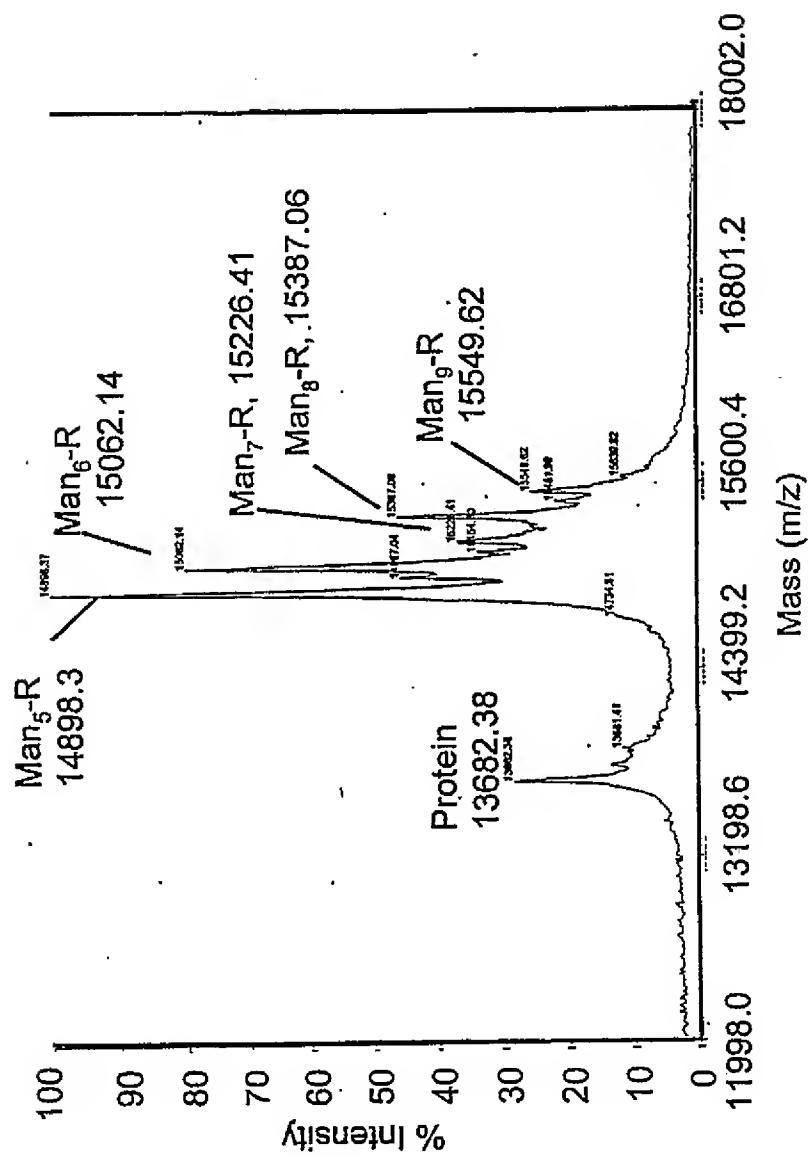


FIG. 180A

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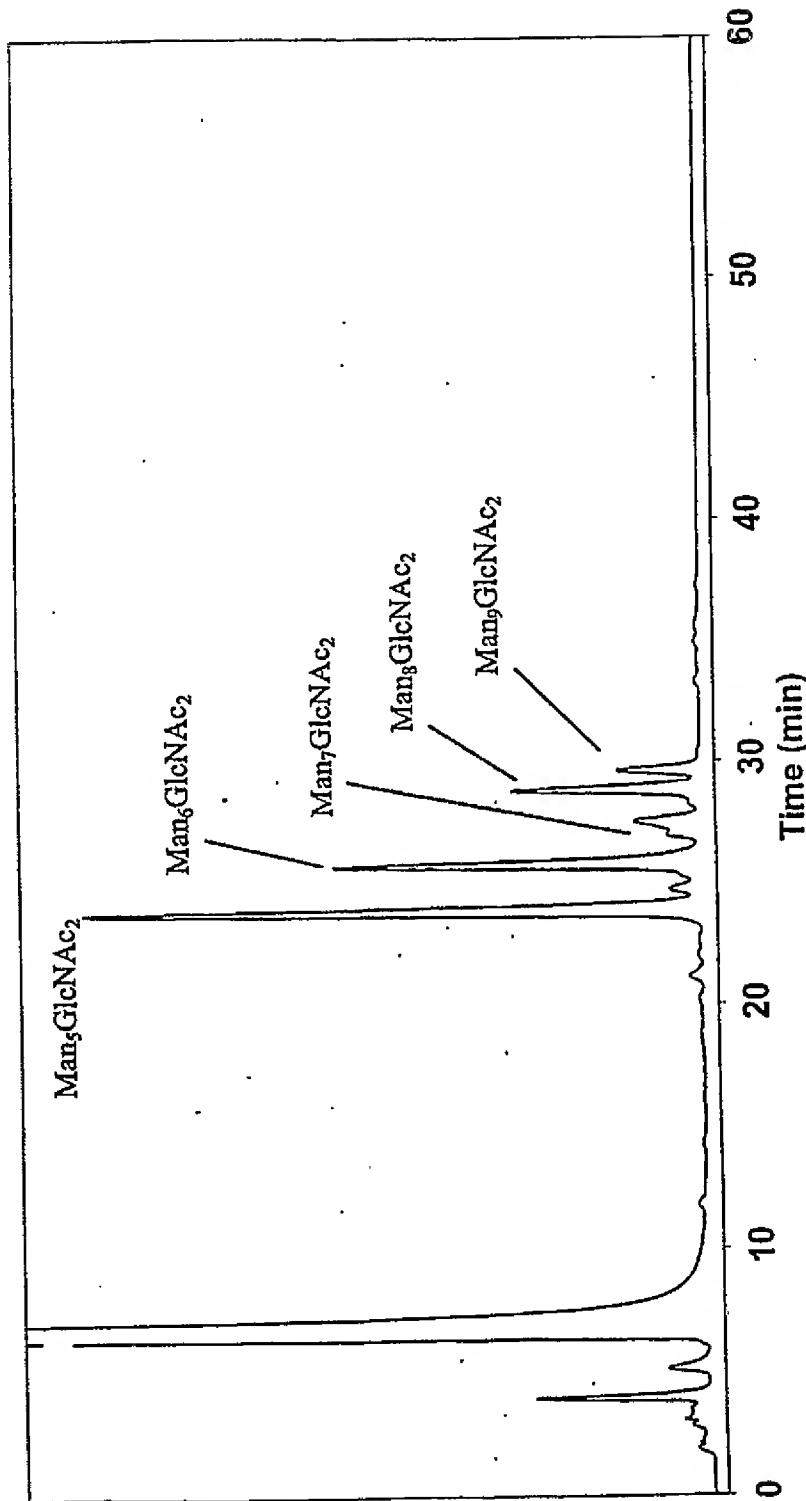


FIG. 180B

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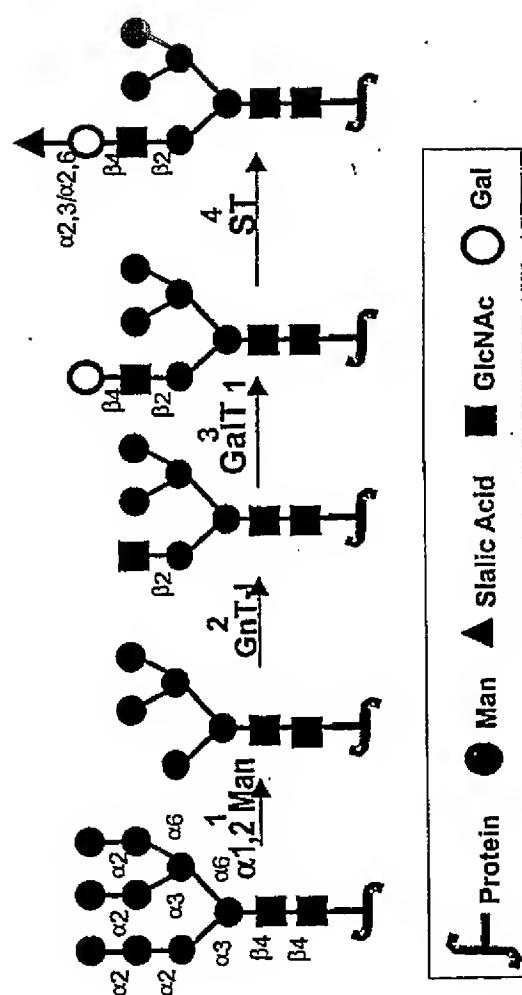


FIG. 181

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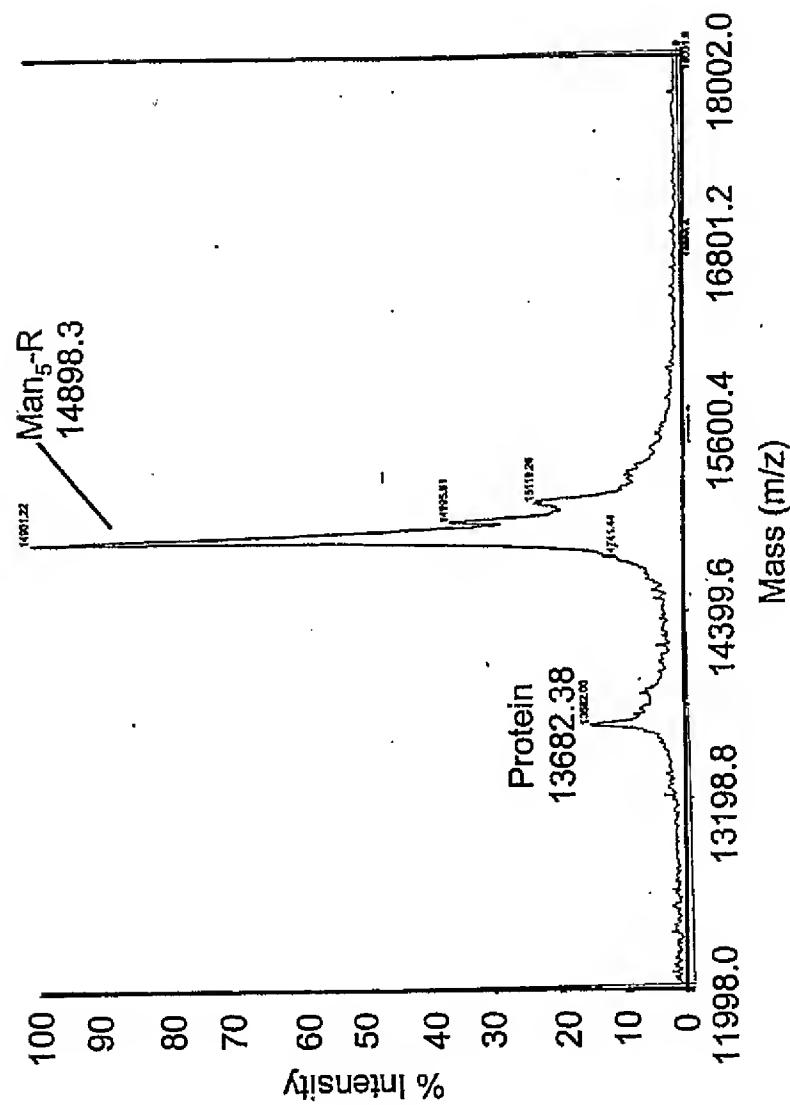


FIG. 182A

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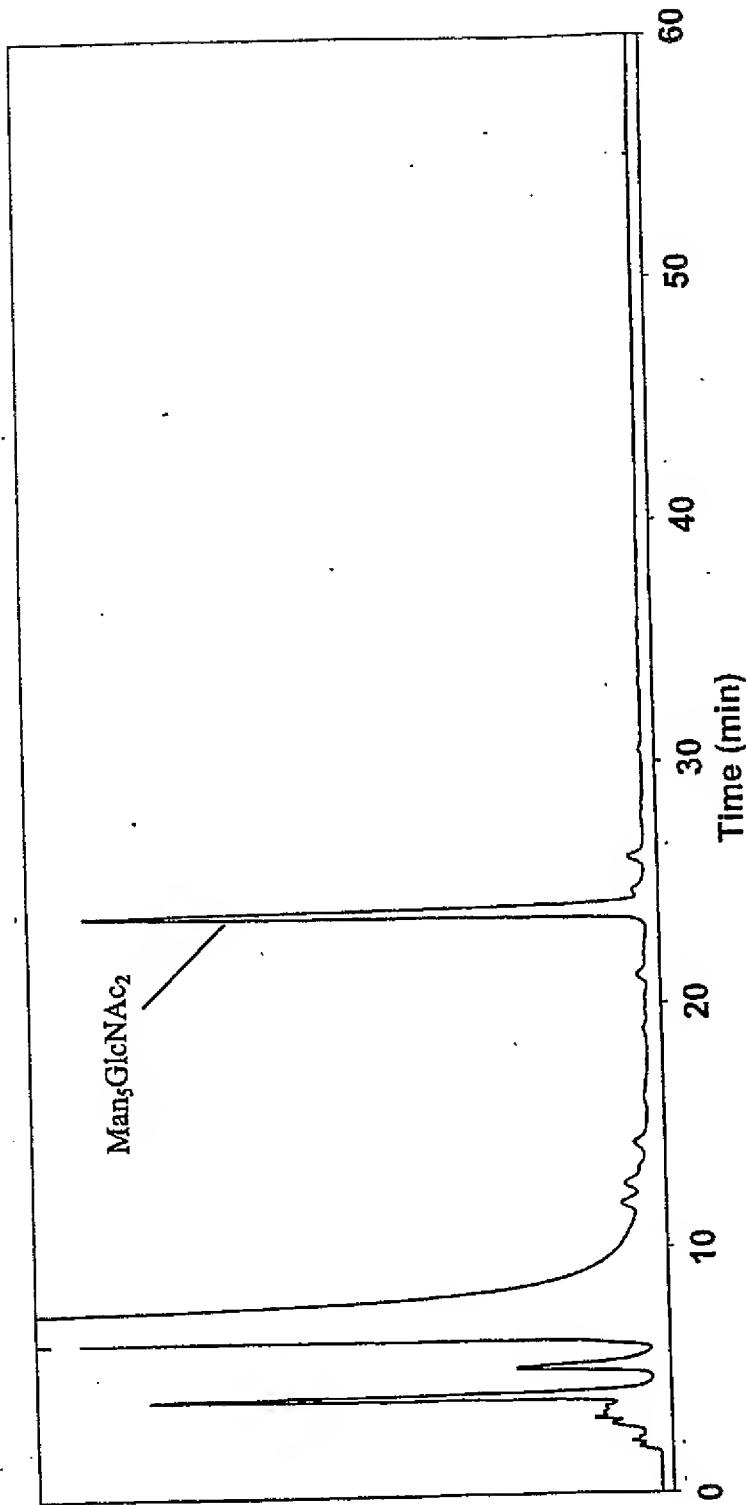


FIG. 182B

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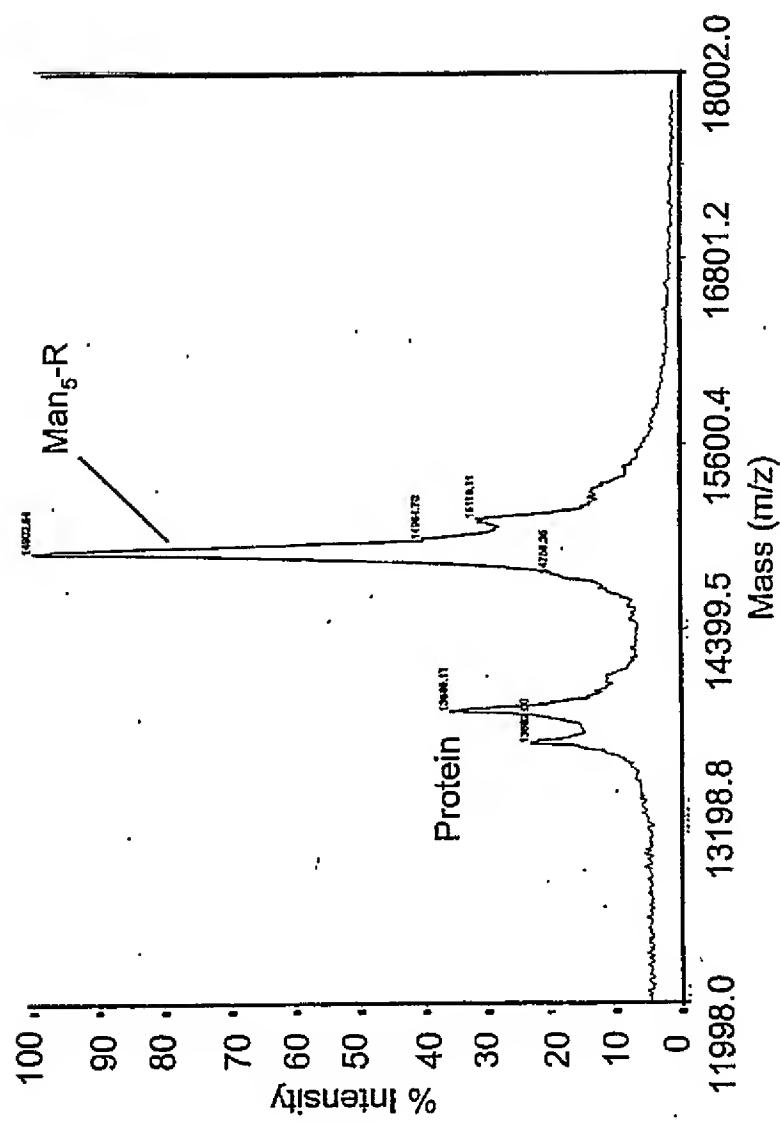


FIG. 183

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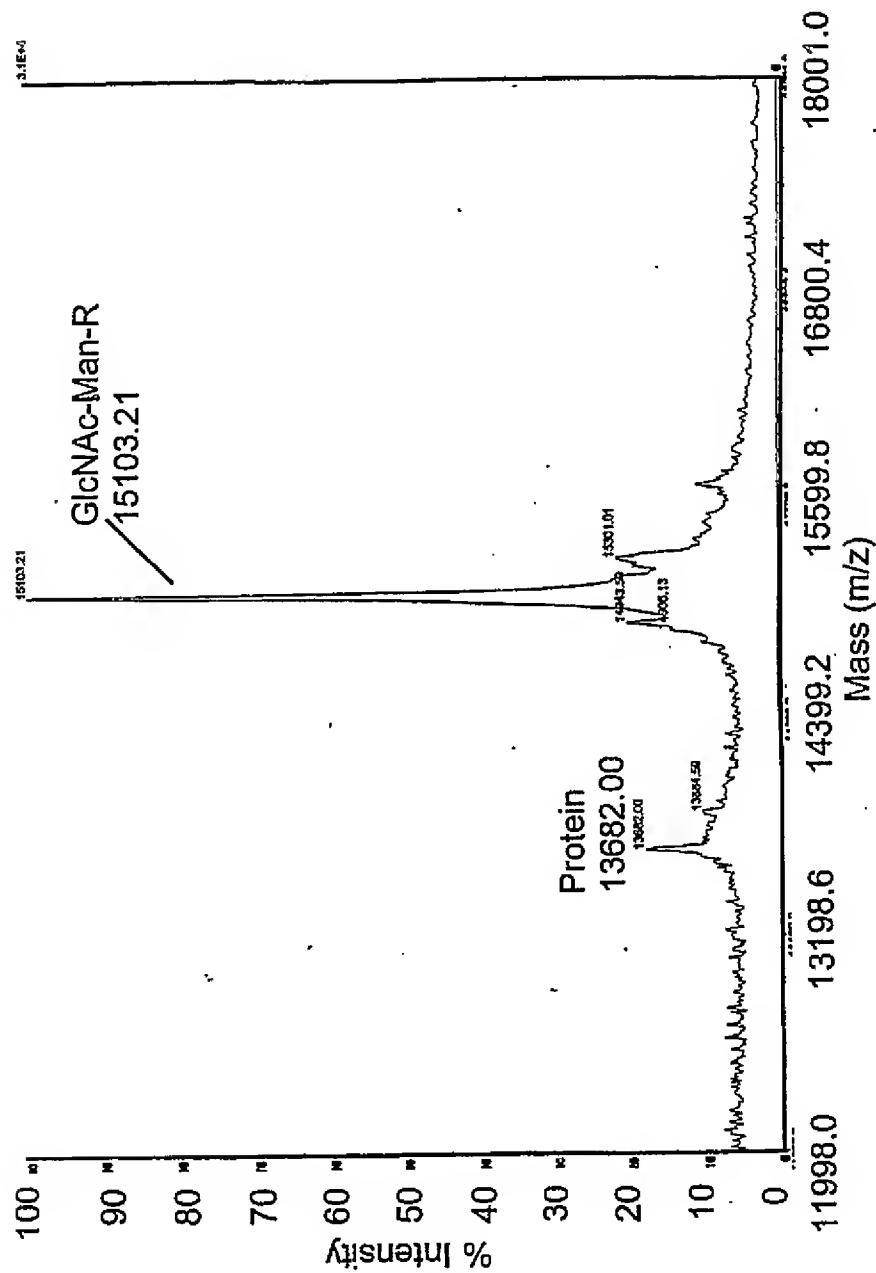


FIG. 184

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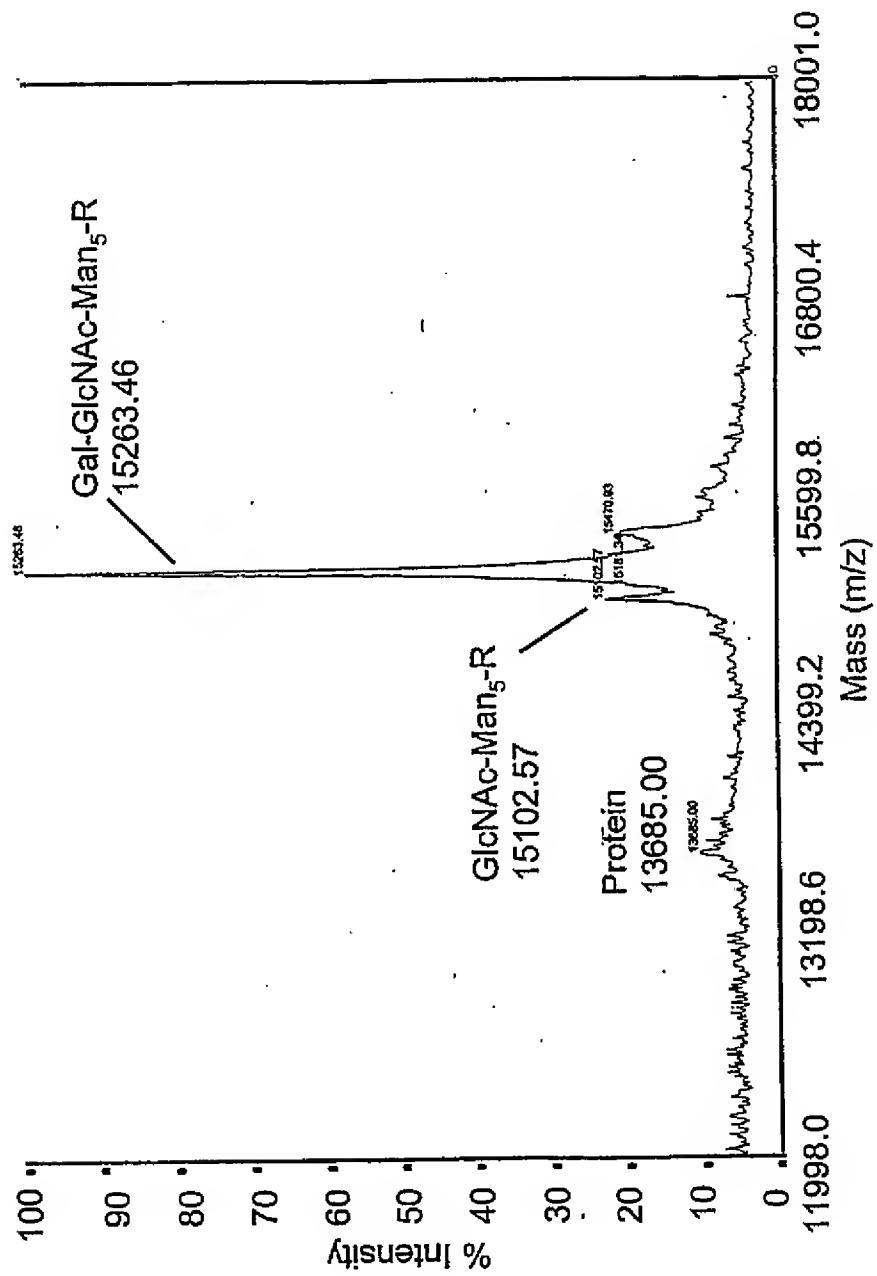


FIG. 185

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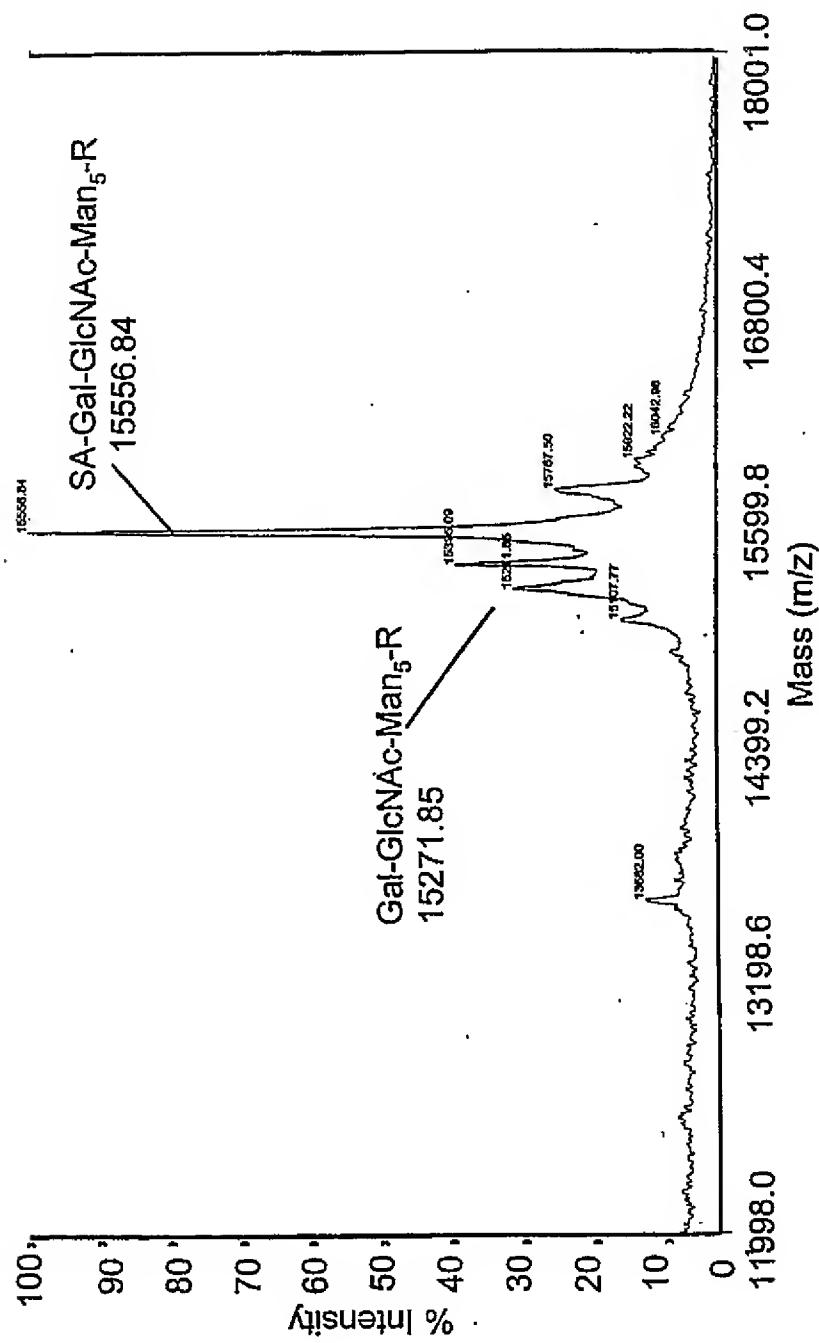
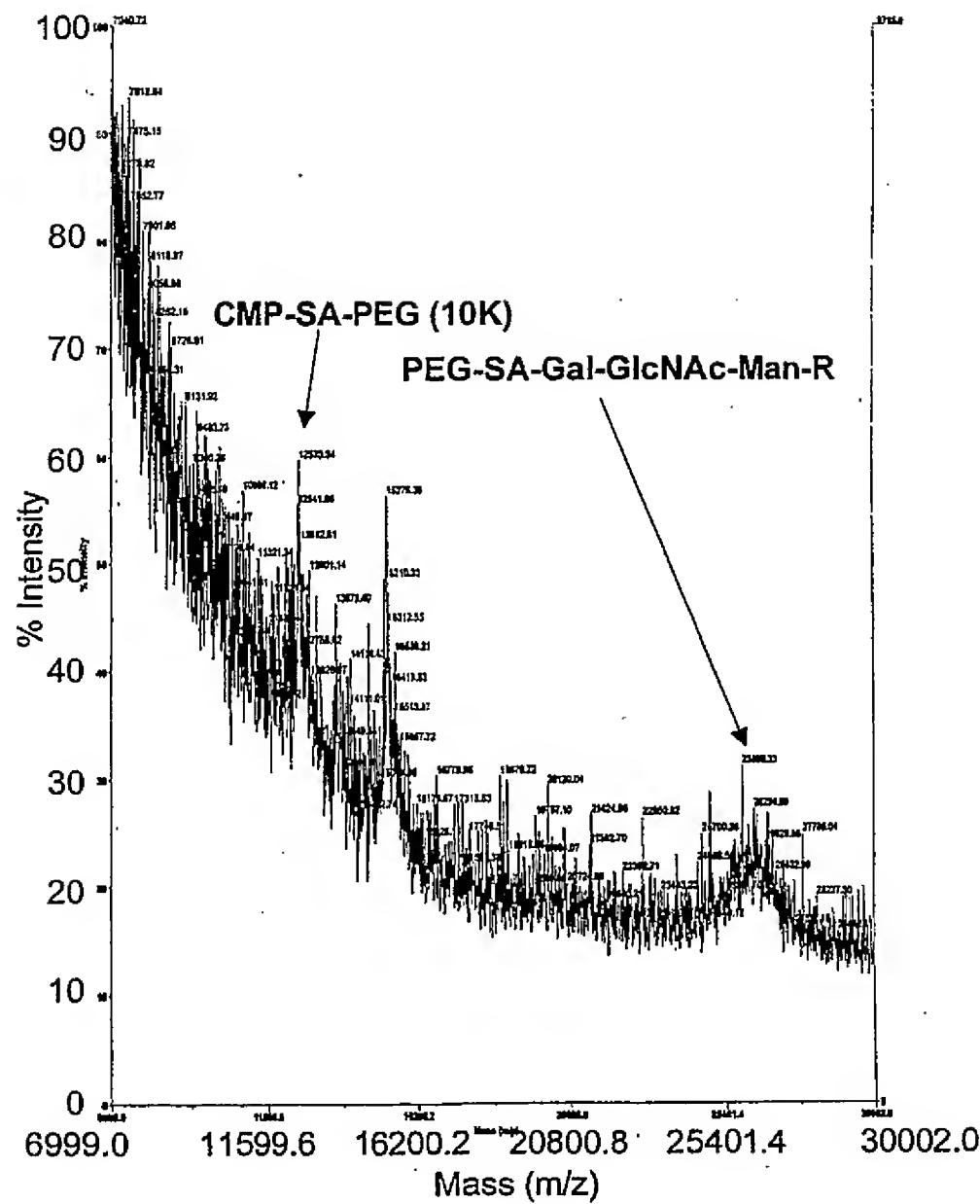


FIG. 186

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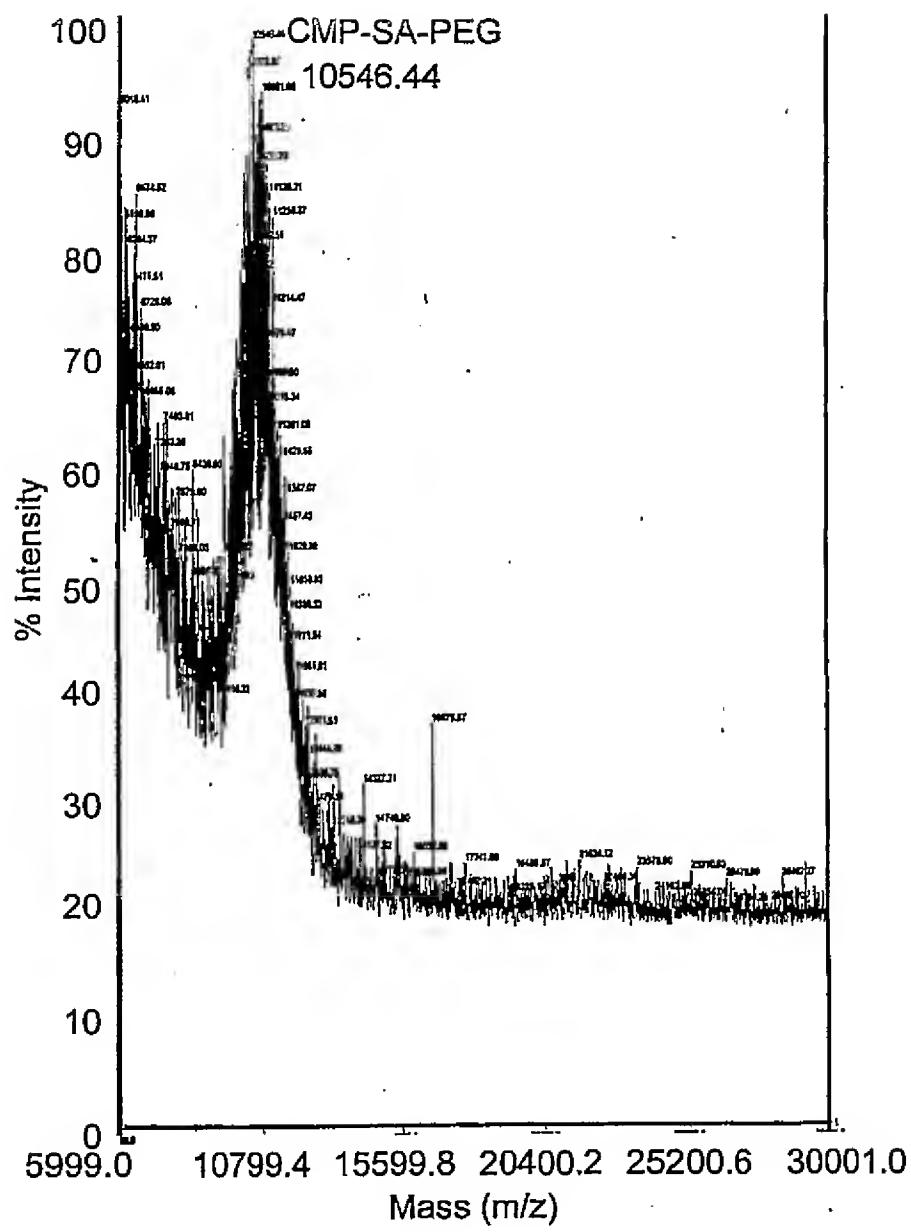
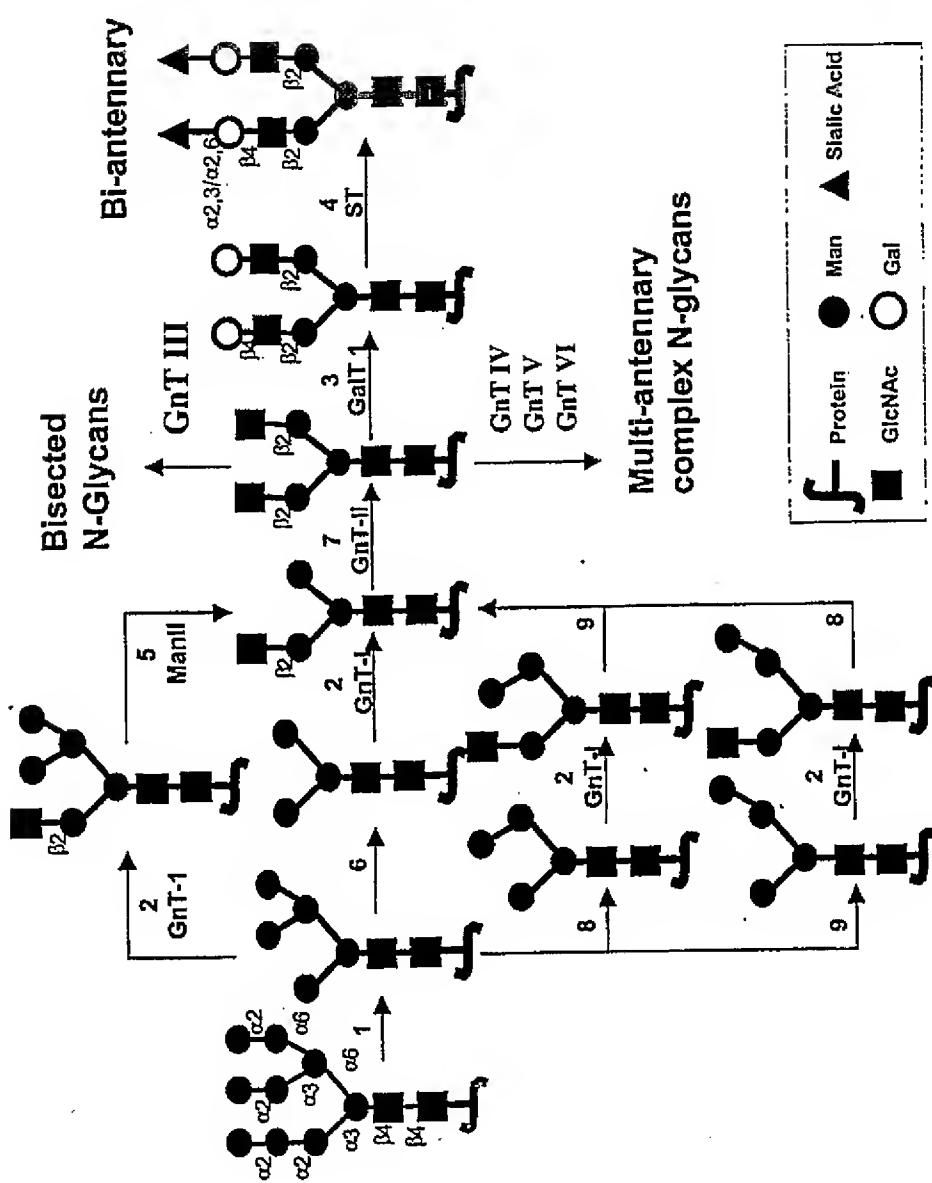


FIG. 187B

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FIG. 188



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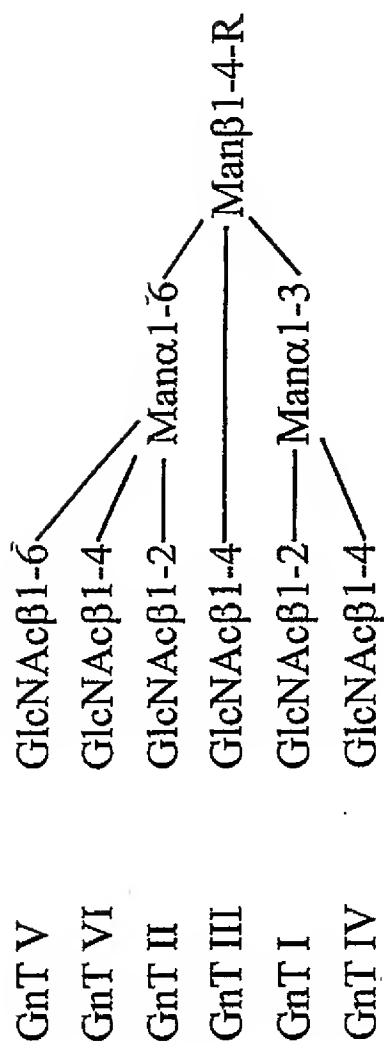


FIG. 189

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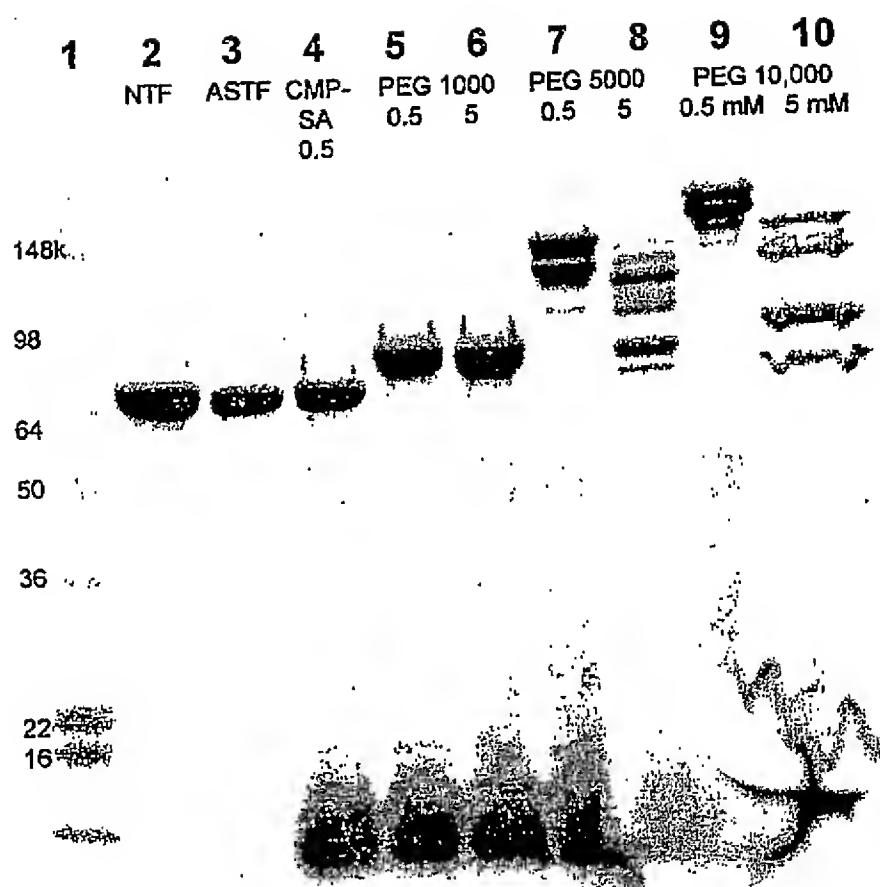


FIG. 190

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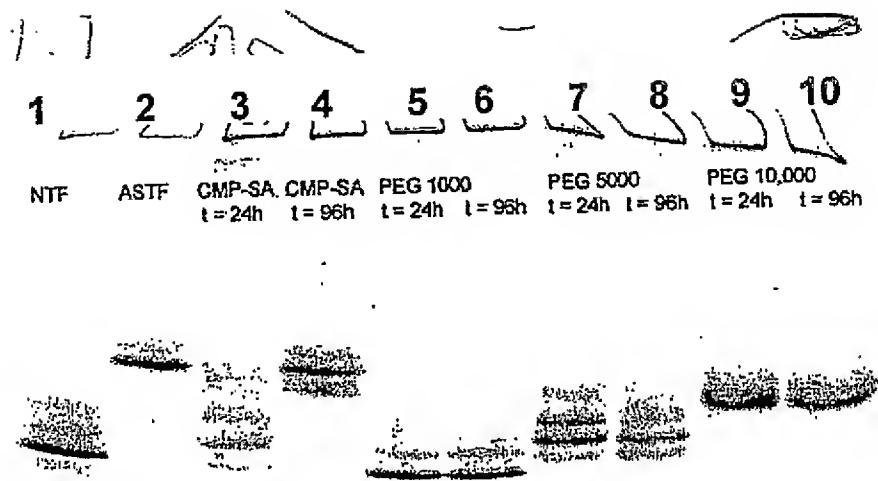


FIG. 191

## SEQUENCE LISTING

<110> Neose Technologies, Inc.  
DeFrees, Shawn  
Zopf, David  
Bayer, Robert  
Hakes, David  
Chen, Xi  
Bowe, Caryne

<120> GLYCOPEGLATION METHODS AND PROTEINS/PEPTIDES PRODUCED BY THE METHODS

<130> 040853-01-5051WO

<150> US 60/328,523  
<151> 2001-10-10

<150> US 60/334,233  
<151> 2001-11-28

<150> US 60/334,301  
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<150> US 60/344,692  
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<150> US 60/387,292  
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<151> 2002-07-17

<150> US 60/404,249  
<151> 2002-08-16

<150> US 60/407,527  
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<150> PCT/US02/32263  
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 360  
 atgaaagaac tggaaatggc ccctgccctg cagcccaccc agggtgccat gccggccatc  
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&lt;213&gt; Homo sapiens

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 Glu Lys Leu Cys Ala Thr Tyr Lys Leu Cys His Pro Glu Glu Leu Val  
 35 40 45  
 Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro Leu Ser Ser Cys  
 50 55 60  
 Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser  
 65 70 75 80  
 Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser  
 85 90 95  
 Pro Glu Leu Gly Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp  
 100 105 110  
 Phe Ala Thr Thr Ile Trp Gln Gln Met Glu Glu Leu Gly Met Ala Pro  
 115 120 125  
 Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe Ala Ser Ala Phe

130

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180

taggataatgt aaatagataac acagtgtata tgtgattaaa atataatggg agattcaatc  
240

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tgtggtgaga aaaacagctg aaaaccatg taaagagtgt ataaagaaag caaaaagaga  
360

agtagaaaagt aacacagggg catttgaaaa atgtaaacga gtatgttccc tatttaaggc  
420

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accagtcttag cagcatctgc aacatctaca atggcattga cttttgtttt actggggcc  
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660

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720

caaaaggctg aaaccatccc tgcctccat gagatgatcc agcagatctt caatctttc  
780

agcacaaagg actcatctgc tgcttggat gagaccctoc tagacaaatt ctacactgaa  
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900

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960

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20 25 30

Gly Ser Arg Arg Thr Leu Met Leu Leu Ala Gln Met Arg Arg Ile Ser  
35 40 45

Leu Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Phe Pro Gln Glu  
50 55 60

Glu Phe Gly Asn Gln Phe Gln Lys Ala Glu Thr Ile Pro Val Leu His  
65 70 75 80

Glu<sup>1</sup> Met<sup>2</sup> Ile Gln<sup>3</sup> Gln<sup>4</sup> Ile Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser  
85 90 95

Ala Ala Trp Asp Glu Thr Leu Leu Asp Lys Phe Tyr Thr Glu Leu Tyr  
100 105 110

Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Ile Gln Gly Val Gly Val  
115 120 125

Thr Glu Thr Pro Leu Met Lys Glu Asp Ser Ile Leu Ala Val Arg Lys  
130 135 140

Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Lys Glu Lys Lys Tyr Ser Pro  
145 150 155 160

Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser Leu  
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Ser Thr Asn Leu Gln Glu Ser Leu Arg Ser Lys Glu  
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20 25 30

Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg  
35 40 45

Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu  
50 55 60

Ile Lys Gln Leu Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile  
65 70 75 80

Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser  
85 90 95

Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val  
100 105 110

Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu  
115 120 125

Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys  
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180

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420

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480

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540

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600

gagtgtccat ggcaggtcct gttgtggtg aatggagctc agttgtgtgg ggggaccctg  
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780

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840

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1140

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1200

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Leu His Arg Arg Arg Arg Ala Asn Ala Phe Leu Glu Glu Leu Arg Pro  
35 40 45  
  
Gly Ser Leu Glu Arg Glu Cys Lys Glu Glu Gln Cys Ser Phe Glu Glu  
50 55 60  
  
Ala Arg Glu Ile Phe Lys Asp Ala Glu Arg Thr Lys Leu Phe Trp Ile  
65 70 75 80  
  
Ser Tyr Ser Asp Gly Asp Gln Cys Ala Ser Ser Pro Cys Gln Asn Gly  
85 90 95  
  
Gly Ser Cys Lys Asp Gln Leu Gln Ser Tyr Ile Cys Phe Cys Leu Pro  
100 105 110  
  
Ala Phe Glu Gly Arg Asn Cys Glu Thr His Lys Asp Asp Gln Leu Ile  
115 120 125  
  
Cys Val Asn Glu Asn Gly Gly Cys Glu Gln Tyr Cys Ser Asp His Thr  
130 135 140  
  
Gly Thr Lys Arg Ser Cys Arg Cys His Glu Gly Tyr Ser Leu Leu Ala  
145 150 155 160  
  
Asp Gly Val Ser Cys Thr Pro Thr Val Glu Tyr Pro Cys Gly Lys Ile  
165 170 175  
  
Pro Ile Leu Glu Lys Arg Asn Ala Ser Lys Pro Gln Gly Arg Ile Val  
180 185 190  
  
Gly Gly Lys Val Cys Pro Lys Gly Glu Cys Pro Trp Gln Val Leu Leu  
195 200 205  
  
Leu Val Asn Gly Ala Gln Leu Cys Gly Gly Thr Leu Ile Asn Thr Ile  
210 215 220  
  
Trp Val Val Ser Ala Ala His Cys Phe Asp Lys Ile Lys Asn Trp Arg  
225 230 235 240  
  
Asn Leu Ile Ala Val Leu Gly Glu His Asp Leu Ser Glu His Asp Gly  
245 250 255  
  
Asp Glu Gln Ser Arg Arg Val Ala Gln Val Ile Ile Pro Ser Thr Tyr  
260 265 270  
  
Val Pro Gly Thr Thr Asn His Asp Ile Ala Leu Leu Arg Leu His Gln  
275 280 285



tätögaattg öagaääacca gaagtccgtt gaaccaggag tgccattttcc atgtggaaaga  
540

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720

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780

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900

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960

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1260

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1320

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1380

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1437

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<211> 462  
<212> PRT  
<213> Homo sapiens

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Ile Cys Leu Leu Gly Tyr Leu Leu Ser Ala Glu Cys Thr Val Phe Leu  
20 25 30

Asp His Glu Asn Ala Asn Lys Ile Leu Asn Arg Pro Lys Arg Tyr Asn

35

40

45

Ser Gly Lys Leu Glu Glu Phe Val Gln Gly Asn Leu Glu Arg Glu Cys  
 50 55 60

Met Glu Glu Lys Cys Ser Phe Glu Glu Pro Arg Glu Val Phe Glu Asn  
 65 70 75 80

Thr Glu Lys Thr Thr Glu Phe Trp Lys Gln Tyr Val Asp Gly Asp Gln  
 85 90 95

Cys Glu Ser Asn Pro Cys Leu Asn Gly Gly Ser Cys Lys Asp Asp Ile  
 100 105 110

Asn Ser Tyr Glu Cys Trp Cys Pro Phe Gly Phe Glu Gly Lys Asn Cys  
 115 120 125

Glu Leu Asp Val Thr Cys Asn Ile Lys Asn Gly Arg Cys Glu Gln Phe  
 130 135 140

Cys Lys Asn Ser Ala Asp Asn Lys Val Val Cys Ser Cys Thr Glu Gly  
 145 150 155 160

Tyr Arg Leu Ala Glu Asn Gln Lys Ser Cys Glu Pro Ala Val Pro Phe  
 165 170 175

Pro Cys Gly Arg Val Ser Val Ser Gln Thr Ser Lys Leu Thr Arg Ala  
 180 185 190

Glu Ala Val Phe Pro Asp Val Asp Tyr Val Asn Pro Thr Glu Ala Glu  
 195 200 205

Thr Ile Leu Asp Asn Ile Thr Gln Gly Thr Gln Ser Phe Asn Asp Phe  
 210 215 220

Thr Arg Val Val Gly Gly Glu Asp Ala Lys Pro Gly Gln Phe Pro Trp  
 225 230 235 240

Gln Val Val Leu Asn Gly Lys Val Asp Ala Phe Cys Gly Ser Ile  
 245 250 255

Val Asn Glu Lys Trp Ile Val Thr Ala Ala His Cys Val Glu Thr Gly  
 260 265 270

Val Lys Ile Thr Val Val Ala Gly Glu His Asn Ile Glu Glu Thr Glu  
 275 280 285

His Thr Glu Gln Lys Arg Asn Val Ile Arg Ala Ile Ile Pro His His  
 290 295 300

Asn Tyr Asn Ala Ala Ile Asn Lys Tyr Asn His Asp Ile Ala Leu Leu  
 305 310 315 320

Glu Leu Asp Glu Pro Leu Val Leu Asn Ser Tyr Val Thr Pro Ile Cys  
 325 330 335

Ile Ala Asp Lys Glu Tyr Thr Asn Ile Phe Leu Lys Phe Gly Ser Gly  
 340 345 350

Tyr Val Ser Gly Trp Ala Arg Val Phe His Lys Gly Arg Ser Ala Leu  
 355 360 365

Val Leu Gln Tyr Leu Arg Val Pro Leu Val Asp Arg Ala Thr Cys Leu  
 370 375 380

Arg Ser Thr Lys Phe Thr Ile Tyr Asn Asn Met Phe Cys Ala Gly Phe  
 385 390 395 400

His Glu Gly Gly Arg Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro His  
 405 410 415

Val Thr Glu Val Glu Gly Thr Ser Phe Leu Thr Gly Ile Ile Ser Trp  
 420 425 430

Gly Glu Glu Cys Ala Met Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val  
 435 440 445

Ser Arg Tyr Val Asn Trp Ile Lys Glu Lys Thr Lys Leu Thr  
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<210> 11

<211> 603

<212> DNA

<213> Homo sapiens

<400> 11

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 120

ttcttcctcc agccgggtgc cccaaatactt cagtgcatttgc gctgctgcctt ctcttagagca  
 180

tatccccactc cactaaggc caagaagacg atgttggcc aaaaagaacgt cacccatc  
 240

tccacttgct gtgttagctaa atcatataac agggtcacag taatgggggg tttcaaagtg  
 300

gagaaccaca cggcgtgcc a ctcgtact tggatggaa aatggatgg ttttttttttt  
 360

caagtgtgt ctgtatgtact gtttttttc tggatggaa aatggatgg ttttttttt  
 420

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 480

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atc

603

<210> 12

<211> 116

<212> PRT

&lt;213&gt; Homo sapiens

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 20 25 30  
 Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro  
 35 40 45  
 Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro  
 50 55 60  
 Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu  
 65 70 75 80  
 Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly  
 85 90 95  
 Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr  
 100 105 110  
 Tyr His Lys Ser  
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<210> 13  
<211> 390  
<212> DNA  
<213> Homo sapiens

<400> 13  
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 120  
 atcaacacca cttgggtgtgc tggctactgc tacaccaggaa atctggtgta taaggaccca  
 180  
 gccaggccca aaatccagaa aacatgtacc ttcaagggaaac tggtatatga aacagtggaa  
 240  
 gtgccggct gtgctcacca tgcagattcc ttgtatacat acccagtggc cacccagtgt  
 300  
 cactgtggca agtgtgacag cgacagcaact gattgtactg tgcgaggcct ggggccccagc  
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 390

<210> 14  
<211> 129  
<212> PRT  
<213> Homo sapiens

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 Met Lys Thr Leu Gln Phe Phe Leu Phe Cys Cys Trp Lys Ala Ile

1

5

10

15

Cys Cys Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile Glu Lys  
 20 25 30

Glu Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys Ala Gly  
 35 40 45

Tyr Cys Tyr Thr Arg Asp Leu Val Tyr Lys Asp Pro Ala Arg Pro Lys  
 50 55 60

Ile Gln Lys Thr Cys Thr Phe Lys Glu Leu Val Tyr Glu Thr Val Arg  
 65 70 75 80

Val Pro Gly Cys Ala His His Ala Asp Ser Leu Tyr Thr Tyr Pro Val  
 85 90 95

Ala Thr Gln Cys His Cys Gly Lys Cys Asp Ser Asp Ser Thr Asp Cys  
 100 105 110

Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe Gly Glu Met Lys  
 115 120 125

Glu

<210> 15  
<211> 1342  
<212> DNA  
<213> Homo sapiens .

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120  
gccccggtg tggcacccg ggcgcaccca ggtcgcttag ggacccggc caggcgccga  
180  
gatgggggtg cacgaatgtc ctgcctggct gtggcttctc ctgtccctgc tgtcgctccc  
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300  
gaggtaccc ttggaggcca aggaggccga gaatatcactg acgggctgtg ctgaacactg  
360  
cagcttaat gagaatatca ctgtccca gagaaatgtt aatttctatg cctggaagag  
420  
gatggaggtc gggcagcagg ccgtagaagt ctggcaggcc ctggccctgc tgtcggaagc  
480  
tgtcctgcgg ggccaggccc tggcgtcaa ctttccca agccgtggagc ccctgcagct  
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600

agcccagaag gaagccatct cccctccaga tgccggcctca gctgtccac tccgaacaat  
660

cactgctgac actttccgca aactcttccg agtctactcc aatttcctcc ggggaaagct  
720

gaagctgtac acaggggaggc cctgcaggac aggggacaga tgaccaggtg tgtccacctg  
780

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900

gcaatgacat ctcaaggggcc agaggaactg tccagagagc aactctgaga tctaaggatg  
960

tcacagggcc aacttgaggg cccagagcag gaagcattca gagagcagct ttaaactcag  
1020

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1080

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1200

ggggcaaga gcccccattga caccggggtg gtgggaacca tgaagacagg atgggggctg  
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1342

<210> 16  
<211> 193  
<212> PRT  
<213> Homo sapiens

<400> 16  
Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu  
1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu  
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu  
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu  
50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg  
65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu  
85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser  
100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly  
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Arg Ala Gln Lys Glu  
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile  
145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu  
165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp  
180 185 190

Arg

<210> 17

<211> 435

<212> DNA

<213> Homo sapiens

<400> 17

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120

cgttcctcata acctgagtag agacactgct gctgagatga atgaaacagt agaagtcatc  
180

tcaaaaaatgt ttgacccatcca ggagccgacc tgcctacaga cccgccttggc gctgtacaag  
240

caggccctgc gggccagcct caccaagctc aaggggccct tgaccatgtat ggccagccac  
300

tacaaggcagc actgcctcc aaccccgaa acttcctgtg caacccagat tatcaccttt  
360

gaaagttca aagagaacct gaaggacttt ctgcttgtca tcccctttga ctgctgggag  
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ccagtccagg agtga

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<210> 18

<211> 144

<212> PRT

<213> Homo sapiens

<400> 18

Met Trp Leu Gln Ser Leu Leu Leu Gly Thr Val Ala Cys Ser Ile

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10

15

Ser Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His  
 20 25 30

Val Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp  
 35 40 45

Thr Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe  
 50 55 60

Asp Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys  
 65 70 75 80

Gln Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met  
 85 90 95

Met Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser  
 100 105 110

Cys Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys  
 115 120 125

Asp Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu  
 130 135 140

&lt;210&gt; 19

&lt;211&gt; 501

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 19

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 120

ggtcattcag atgttagcgga taatggaact cttttcttag gcattttgaa gaatttgaaa  
 180

gaggagagtg acagaaaaat aatgcagagc caaattgtct cttttactt caaactttt  
 240

aaaaacttta aagatgacca gagcatccaa aagagtgtgg agaccatcaa ggaagacatg  
 300

aatgtcaagt ttttcaatag caacaaaaag aaacgagatg acttcgaaaa gctgactaat  
 360

tattcgtaa ctgacttgaa tgtccaacgc aaagcaatac atgaactcat ccaagtgtatg  
 420

gctgaactgt cgccagcagc taaaacaggg aagcgaaaaa ggagtcagat gctgtttcga  
 480

ggtcgaagag catcccagta a  
 501

&lt;210&gt; 20

&lt;211&gt; 166

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 20

|   |    |
|---|----|
| Met Lys Tyr Thr Ser Tyr Ile Leu Ala Phe Gln Leu Cys Ile Val Leu |    |
| 1   | 5  |
|   | 10 |
|   | 15 |

|   |    |
|---|----|
| Gly Ser Leu Gly Cys Tyr Cys Gln Asp Pro Tyr Val Lys Glu Ala Glu |    |
| 20  | 25 |
|   | 30 |

|   |    |
|---|----|
| Asn Leu Lys Lys Tyr Phe Asn Ala Gly His Ser Asp Val Ala Asp Asn |    |
| 35  | 40 |
|   | 45 |

|   |    |
|---|----|
| Gly Thr Leu Phe Leu Gly Ile Leu Lys Asn Trp Lys Glu Glu Ser Asp |    |
| 50  | 55 |
|   | 60 |

|   |    |
|---|----|
| Arg Lys Ile Met Gln Ser Gln Ile Val Ser Phe Tyr Phe Lys Leu Phe |    |
| 65  | 70 |
|   | 75 |
|   | 80 |

|   |    |
|---|----|
| Lys Asn Phe Lys Asp Asp Gln Ser Ile Gln Lys Ser Val Glu Thr Ile |    |
| 85  | 90 |
|   | 95 |

|   |     |
|---|-----|
| Lys Glu Asp Met Asn Val Lys Phe Phe Asn Ser Asn Lys Lys Arg |     |
| 100   | 105 |
|   | 110 |

|   |     |
|---|-----|
| Asp Asp Phe Glu Lys Leu Thr Asn Tyr Ser Val Thr Asp Leu Asn Val |     |
| 115   | 120 |
|   | 125 |

|   |     |
|---|-----|
| Gln Arg Lys Ala Ile His Glu Leu Ile Gln Val Met Ala Glu Leu Ser |     |
| 130   | 135 |
|   | 140 |

|   |     |
|---|-----|
| Pro Ala Ala Lys Thr Gly Lys Arg Lys Arg Ser Gln Met Leu Phe Arg |     |
| 145   | 150 |
|   | 155 |
|   | 160 |

|                         |  |
|-------------------------|--|
| Gly Arg Arg Ala Ser Gln |  |
| 165                     |  |

&lt;210&gt; 21

&lt;211&gt; 1352

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 21

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| 60   |  |

|   |  |
|---|--|
| cctgtgctgc ctggcccttg tctccctggc tgaggatccc cagggagatg ctgcccagaa |  |
| 120   |  |

|   |  |
|---|--|
| gacagataca tccccaccatg atcaggatca cccaaacottt aacaagatca cccccaacct |  |
| 180   |  |

|   |  |
|---|--|
| ggctgagttc gcatttcagcc tataccgcca gctggcacac cagtccaaaca gcaccaatat |  |
| 240   |  |

|   |  |
|---|--|
| cttcttctcc ccagttagca tcgctacagc ctttgcaatg ctctccctgg ggaccaaggc |  |
| 300   |  |

|  |  |
|--|--|
| tgcacactcac gatgaaatcc tggagggcct gaatttcaac ctcacggaga ttccggaggc |  |
| 360  |  |

tcagatccat gaaggcttcc aggaactctt ccgtaccctc aaccaggccag acagccagct  
 420  
 ccagctgacc accggcaatg gcctgttcct cagcgagggc ctgaagctag tggataagtt  
 480  
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 720  
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 1200  
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 1260  
 tcccacccaa aaataactgc ctctcgctcc tcaacccctc ccctccatcc ctggccccc  
 1320  
 ccctggatga cattaaagaa gggttgagct gg  
 1352  
  
 <210> 22  
 <211> 418  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 22  
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 Cys Leu Val Pro Val Ser Leu Ala Glu Asp Pro Gln Gly Asp Ala Ala

20

25

30

Gln Lys Thr Asp Thr Ser His His Asp Gln Asp His Pro Thr Phe Asn  
 35 40 45

Lys Ile Thr Pro Asn Leu Ala Glu Phe Ala Phe Ser Leu Tyr Arg Gln  
 50 55 60

Leu Ala His Gln Ser Asn Ser Thr Asn Ile Phe Phe Ser Pro Val Ser  
 65 70 75 80

Ile Ala Thr Ala Phe Ala Met Leu Ser Leu Gly Thr Lys Ala Asp Thr  
 85 90 95

His Asp Glu Ile Leu Glu Gly Leu Asn Phe Asn Leu Thr Glu Ile Pro  
 100 105 110

Glu Ala Gln Ile His Glu Gly Phe Gln Glu Leu Leu Arg Thr Leu Asn  
 115 120 125

Gln Pro Asp Ser Gln Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Leu  
 130 135 140

Ser Glu Gly Leu Lys Leu Val Asp Lys Phe Leu Glu Asp Val Lys Lys  
 145 150 155 160

Leu Tyr His Ser Glu Ala Phe Thr Val Asn Phe Gly Asp Thr Glu Glu  
 165 170 175

Ala Lys Lys Gln Ile Asn Asp Tyr Val Glu Lys Gly Thr Gln Gly Lys  
 180 185 190

Ile Val Asp Leu Val Lys Glu Leu Asp Arg Asp Thr Val Phe Ala Leu  
 195 200 205

Val Asn Tyr Ile Phe Phe Lys Gly Lys Trp Glu Arg Pro Phe Glu Val  
 210 215 220

Lys Asp Thr Glu Glu Glu Asp Phe His Val Asp Gln Val Thr Thr Val  
 225 230 235 240

Lys Val Pro Met Met Lys Arg Leu Gly Met Phe Asn Ile Gln His Cys  
 245 250 255

Lys Lys Leu Ser Ser Trp Val Leu Leu Met Lys Tyr Leu Gly Asn Ala  
 260 265 270

Thr Ala Ile Phe Phe Leu Pro Asp Glu Gly Lys Leu Gln His Leu Glu  
 275 280 285

Asn Glu Leu Thr His Asp Ile Ile Thr Lys Phe Leu Glu Asn Glu Asp  
 290 295 300

Arg Arg Ser Ala Ser Leu His Leu Pro Lys Leu Ser Ile Thr Gly Thr  
 305 310 315 320

Tyr Asp Leu Lys Ser Val Leu Gly Gln Leu Gly Ile Thr Lys Val Phe  
 325 330 335

Ser Asn Gly Ala Asp Leu Ser Gly Val Thr Glu Glu Ala Pro Leu Lys  
 340 345 350

Leu Ser Lys Ala Val His Lys Ala Val Leu Thr Ile Asp Glu Lys Gly  
 355 360 365

Thr Glu Ala Ala Gly Ala Met Phe Leu Glu Ala Ile Pro Met Ser Ile  
 370 375 380

Pro Pro Glu Val Lys Phe Asn Lys Pro Phe Val Phe Leu Met Ile Glu  
 385 390 395 400

Gln Asn Thr Lys Ser Pro Leu Phe Met Gly Lys Val Val Asn Pro Thr  
 405 410 415

## Gln Lys

&lt;210&gt; 23

&lt;211&gt; 2004

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 23

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 120

ggatggagtt ttcaagtctt tccagagagg aatgtccaa gccttgagt agggtaagca  
 180

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|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <400> 24 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Met      | Glu | Phe | Ser | Ser | Pro | Ser | Arg | Glu | Glu | Cys | Pro | Lys | Pro | Leu | Ser |     |
| 1        |     |     |     |     |     |     |     | 5   |     | 10  |     |     |     |     |     | 15  |
| Arg      | Val | Ser | Ile | Met | Ala | Gly | Ser | Leu | Thr | Gly | Leu | Leu | Leu | Leu | Gln |     |
|          |     |     |     |     |     |     |     | 20  |     | 25  |     |     |     |     |     | 30  |
| Ala      | Val | Ser | Trp | Ala | Ser | Gly | Ala | Arg | Pro | Cys | Ile | Pro | Lys | Ser | Phe |     |
|          |     |     |     |     |     |     |     | 35  |     | 40  |     |     |     |     |     | 45  |
| Gly      | Tyr | Ser | Ser | Val | Val | Cys | Val | Cys | Asn | Ala | Thr | Tyr | Cys | Asp | Ser |     |
|          |     |     |     |     |     |     |     | 50  |     | 55  |     |     |     |     |     | 60  |
| Phe      | Asp | Pro | Pro | Thr | Phe | Pro | Ala | Leu | Gly | Thr | Phe | Ser | Arg | Tyr | Glu |     |
|          |     |     |     |     |     |     |     | 65  |     | 70  |     |     |     |     |     | 80  |
| Ser      | Thr | Arg | Ser | Gly | Arg | Arg | Met | Glu | Leu | Ser | Met | Gly | Pro | Ile | Gln |     |
|          |     |     |     |     |     |     |     | 85  |     | 90  |     |     |     |     |     | 95  |
| Ala      | Asn | His | Thr | Gly | Thr | Gly | Leu | Leu | Leu | Thr | Leu | Gln | Pro | Glu | Gln |     |
|          |     |     |     |     |     |     |     | 100 |     | 105 |     |     |     |     |     | 110 |
| Lys      | Phe | Gln | Lys | Val | Lys | Gly | Phe | Gly | Gly | Ala | Met | Thr | Asp | Ala | Ala |     |
|          |     |     |     |     |     |     |     | 115 |     | 120 |     |     |     |     |     | 125 |
| Ala      | Leu | Asn | Ile | Leu | Ala | Leu | Ser | Pro | Pro | Ala | Gln | Asn | Leu | Leu | Leu |     |
|          |     |     |     |     |     |     |     | 130 |     | 135 |     |     |     |     |     | 140 |
| Lys      | Ser | Tyr | Phe | Ser | Glu | Glu | Gly | Ile | Gly | Tyr | Asn | Ile | Ile | Arg | Val |     |
|          |     |     |     |     |     |     |     | 145 |     | 150 |     |     |     |     |     | 160 |
| Pro      | Met | Ala | Ser | Cys | Asp | Phe | Ser | Ile | Arg | Thr | Tyr | Thr | Tyr | Ala | Asp |     |
|          |     |     |     |     |     |     |     | 165 |     | 170 |     |     |     |     |     | 175 |
| Thr      | Pro | Asp | Asp | Phe | Gln | Leu | His | Asn | Phe | Ser | Leu | Pro | Glu | Glu | Asp |     |
|          |     |     |     |     |     |     |     | 180 |     | 185 |     |     |     |     |     | 190 |
| Thr      | Lys | Leu | Lys | Ile | Pro | Leu | Ile | His | Arg | Ala | Leu | Gln | Leu | Ala | Gln |     |
|          |     |     |     |     |     |     |     | 195 |     | 200 |     |     |     |     |     | 205 |
| Arg      | Pro | Val | Ser | Leu | Leu | Ala | Ser | Pro | Trp | Thr | Ser | Pro | Thr | Trp | Leu |     |
|          |     |     |     |     |     |     |     | 210 |     | 215 |     |     |     |     |     | 220 |
| Lys      | Thr | Asn | Gly | Ala | Val | Asn | Gly | Lys | Gly | Ser | Leu | Lys | Gly | Gln | Pro |     |
|          |     |     |     |     |     |     |     | 225 |     | 230 |     |     |     |     |     | 240 |
| Gly      | Asp | Ile | Tyr | His | Gln | Thr | Trp | Ala | Arg | Tyr | Phe | Val | Lys | Phe | Leu |     |
|          |     |     |     |     |     |     |     | 245 |     | 250 |     |     |     |     |     | 255 |
| Asp      | Ala | Tyr | Ala | Glu | His | Lys | Leu | Gln | Phe | Trp | Ala | Val | Thr | Ala | Glu |     |
|          |     |     |     |     |     |     |     | 260 |     | 265 |     |     |     |     |     | 270 |
| Asn      | Glu | Pro | Ser | Ala | Gly | Leu | Leu | Ser | Gly | Tyr | Pro | Phe | Gln | Cys | Leu |     |

275

280

285

Gly Phe Thr Pro Glu His Gln Arg Asp Phe Ile Ala Arg Asp Leu Gly  
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Pro Thr Leu Ala Asn Ser Thr His His Asn Val Arg Leu Leu Met Leu  
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Asp Asp Gln Arg Leu Leu Pro His Trp Ala Lys Val Val Leu Thr  
 325 330 335

Asp Pro Glu Ala Ala Lys Tyr Val His Gly Ile Ala Val His Trp Tyr  
 340 345 350

Leu Asp Phe Leu Ala Pro Ala Lys Ala Thr Leu Gly Glu Thr His Arg  
 355 360 365

Leu Phe Pro Asn Thr Met Leu Phe Ala Ser Glu Ala Cys Val Gly Ser  
 370 375 380

Lys Phe Trp Glu Gln Ser Val Arg Leu Gly Ser Trp Asp Arg Gly Met  
 385 390 395 400

Gln Tyr Ser His Ser Ile Ile Thr Asn Leu Leu Tyr His Val Val Gly  
 405 410 415

Trp Thr Asp Trp Asn Leu Ala Leu Asn Pro Glu Gly Gly Pro Asn Trp  
 420 425 430

Val Arg Asn Phe Val Asp Ser Pro Ile Ile Val Asp Ile Thr Lys Asp  
 435 440 445

Thr Phe Tyr Lys Gln Pro Met Phe Tyr His Leu Gly His Phe Ser Lys  
 450 455 460

Phe Ile Pro Glu Gly Ser Gln Arg Val Gly Leu Val Ala Ser Gln Lys  
 465 470 475 480

Asn Asp Leu Asp Ala Val Ala Leu Met His Pro Asp Gly Ser Ala Val  
 485 490 495

Val Val Val Leu Asn Arg Ser Ser Lys Asp Val Pro Leu Thr Ile Lys  
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Asp Pro Ala Val Gly Phe Leu Glu Thr Ile Ser Pro Gly Tyr Ser Ile  
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His Thr Tyr Leu Trp His Arg Gln  
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<212> DNA

<213> Homo sapiens

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240

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960

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<210> 26

<211> 562

<212> PRT

<213> Homo sapiens

<400> 26

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35 40 45

Ile Tyr Gln Gln His Gln Ser Trp Leu Arg Pro Val Leu Arg Ser Asn  
50 55 60

Arg Val Glu Tyr Cys Trp Cys Asn Ser Gly Arg Ala Gln Cys His Ser  
65 70 75 80

Val Pro Val Lys Ser Cys Ser Glu Pro Arg Cys Phe Asn Gly Gly Thr  
85 90 95

Cys Gln Gln Ala Leu Tyr Phe Ser Asp Phe Val Cys Gln Cys Pro Glu  
100 105 110

Gly Phe Ala Gly Lys Cys Cys Glu Ile Asp Thr Arg Ala Thr Cys Tyr  
115 120 125

Glu Asp Gln Gly Ile Ser Tyr Arg Gly Thr Trp Ser Thr Ala Glu Ser  
130 135 140

Gly Ala Glu Cys Thr Asn Trp Asn Ser Ser Ala Leu Ala Gln Lys Pro  
145 150 155 160

Tyr Ser Gly Arg Arg Pro Asp Ala Ile Arg Leu Gly Leu Gly Asn His  
165 170 175

Asn Tyr Cys Arg Asn Pro Asp Arg Asp Ser Lys Pro Trp Cys Tyr Val

180

185

190

Phe Lys Ala Gly Lys Tyr Ser Ser Glu Phe Cys Ser Thr Pro Ala Cys  
 195 200 205

Ser Glu Gly Asn Ser Asp Cys Tyr Phe Gly Asn Gly Ser Ala Tyr Arg  
 210 215 220

Gly Thr His Ser Leu Thr Glu Ser Gly Ala Ser Cys Leu Pro Trp Asn  
 225 230 235 240

Ser Met Ile Leu Ile Gly Lys Val Tyr Thr Ala Gln Asn Pro Ser Ala  
 245 250 255

Gln Ala Leu Gly Leu Gly Lys His Asn Tyr Cys Arg Asn Pro Asp Gly  
 260 265 270

Asp Ala Lys Pro Trp Cys His Val Leu Lys Asn Arg Arg Leu Thr Trp  
 275 280 285

Glu Tyr Cys Asp Val Pro Ser Cys Ser Thr Cys Gly Leu Arg Gln Tyr  
 290 295 300

Ser Gln Pro Gln Phe Arg Ile Lys Gly Gly Leu Phe Ala Asp Ile Ala  
 305 310 315 320

Ser His Pro Trp Gln Ala Ala Ile Phe Ala Lys His Arg Arg Ser Pro  
 325 330 335

Gly Glu Arg Phe Leu Cys Gly Gly Ile Leu Ile Ser Ser Cys Trp Ile  
 340 345 350

Leu Ser Ala Ala His Cys Phe Gln Glu Arg Phe Pro Pro His His Leu  
 355 360 365

Thr Val Ile Leu Gly Arg Thr Tyr Arg Val Val Pro Gly Glu Glu Glu  
 370 375 380

Gln Lys Phe Glu Val Glu Lys Tyr Ile Val His Lys Glu Phe Asp Asp  
 385 390 395 400

Asp Thr Tyr Asp Asn Asp Ile Ala Leu Leu Gln Leu Lys Ser Asp Ser  
 405 410 415

Ser Arg Cys Ala Gln Glu Ser Ser Val Val Arg Thr Val Cys Leu Pro  
 420 425 430

Pro Ala Asp Leu Gln Leu Pro Asp Trp Thr Glu Cys Glu Leu Ser Gly  
 435 440 445

Tyr Gly Lys His Glu Ala Leu Ser Pro Phe Tyr Ser Glu Arg Leu Lys  
 450 455 460

Glu Ala His Val Arg Leu Tyr Pro Ser Ser Arg Cys Thr Ser Gln His  
 465 470 475 480

Leu Leu Asn Arg Thr Val Thr Asp Asn Met Leu Cys Ala Gly Asp Thr  
 485 490 495

Arg Ser Gly Gly Pro Gln Ala Asn Leu His Asp Ala Cys Gln Gly Asp  
 500 505 510

Ser Gly Gly Pro Leu Val Cys Leu Asn Asp Gly Arg Met Thr Leu Val  
 515 520 525

Gly Ile Ile Ser Trp Gly Leu Gly Cys Gly Gln Lys Asp Val Pro Gly  
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Arg Pro

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<211> 825

<212> DNA

<213> Homo sapiens

<400> 27

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 180

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 240

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ccagggactt aatcagcaat atcaacgtaa tagttctgga actaaaggga tctgaaacaa  
 420

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 780

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 825

<210> 28

&lt;211&gt; 156

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 28

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Tyr | Arg | Met | Gln | Leu | Leu | Ser | Cys | Ile | Ala | Leu | Ile | Leu | Ala | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     | 15  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Thr | Asn | Ser | Ala | Pro | Thr | Ser | Ser | Ser | Thr | Lys | Lys | Thr | Lys | Lys |
|     |     |     |     |     |     | 20  |     | 25  |     |     |     | 30  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Gln | Leu | Gln | Leu | Glu | His | Leu | Leu | Leu | Asp | Leu | Gln | Met | Ile | Leu |
|     |     |     |     |     |     | 35  |     | 40  |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Gly | Ile | Asn | Asn | Tyr | Lys | Asn | Pro | Lys | Leu | Thr | Arg | Met | Leu | Thr |
|     |     |     |     |     | 50  |     |     | 55  |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Lys | Phe | Tyr | Met | Pro | Lys | Lys | Ala | Thr | Glu | Leu | Lys | Gln | Leu | Gln |
|     |     |     |     |     | 65  |     | 70  |     | 75  |     |     | 80  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Leu | Glu | Glu | Glu | Leu | Lys | Pro | Leu | Glu | Glu | Val | Leu | Asn | Leu | Ala |
|     |     |     |     |     |     |     | 85  |     | 90  |     |     | 95  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ser | Lys | Asn | Phe | His | Leu | Arg | Pro | Arg | Asp | Leu | Ile | Ser | Asn | Ile |
|     |     |     |     |     | 100 |     |     | 105 |     |     |     | 110 |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Val | Ile | Val | Leu | Glu | Leu | Lys | Gly | Ser | Glu | Thr | Thr | Phe | Met | Cys |
|     |     |     |     |     | 115 |     |     | 120 |     |     | 125 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Tyr | Ala | Asp | Glu | Thr | Ala | Thr | Ile | Val | Glu | Phe | Leu | Asn | Arg | Trp |
|     |     |     |     |     | 130 |     |     | 135 |     |     | 140 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |  |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Ile | Thr | Phe | Cys | Gln | Ser | Ile | Ile | Ser | Thr | Leu | Thr |  |  |  |
|     |     |     |     |     | 145 |     |     | 150 |     |     | 155 |  |  |  |

&lt;210&gt; 29

&lt;211&gt; 7931

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 29

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|-------------|------------|-----------|------------|------------|-------------|
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| 60          |            |           |            |            |             |

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| accagaagat | actacctggg | tgcagtggaa | ctgtcatggg | actatatgca | aagtgatctc |
| 120        |            |            |            |            |            |

|            |            |            |            |             |            |
|------------|------------|------------|------------|-------------|------------|
| ggtgagctgc | ctgtggacgc | aagatttcct | cctagagtgc | caaaaatcttt | tccattcaac |
| 180        |            |            |            |             |            |

|            |             |            |            |           |            |
|------------|-------------|------------|------------|-----------|------------|
| acctcagtcg | tgtacaaaaaa | gactctgttt | gtagaattca | cggtcaccc | tttcaacatc |
| 240        |             |            |            |           |            |

|             |            |            |            |            |            |
|-------------|------------|------------|------------|------------|------------|
| gctaaggccaa | ggccaccctg | gatgggtctg | ctaggtccca | ccatccaggg | tgaggtttat |
| 300         |            |            |            |            |            |

|            |            |            |           |            |            |
|------------|------------|------------|-----------|------------|------------|
| gatacagtgg | tcattacact | taagaacatg | gcttcccac | ctgtcagtct | tcatgctgtt |
| 360        |            |            |           |            |            |

|             |            |            |            |            |            |
|-------------|------------|------------|------------|------------|------------|
| ggtgttatcct | actggaaagc | ttctgaggga | gctgaatatg | atgatcagac | cagtcaaagg |
| 420         |            |            |            |            |            |

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480

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| Asn  | Phe   | Val  | Thr | Gln | Arg | Ser  | Lys  | Arg | Ala | Leu | Lys  | Gln | Phe | Arg |
| 1325 |       |      |     |     |     | 1330 |      |     |     |     | 1335 |     |     |     |
| Leu  | Pro   | Leu  | Glu | Glu | Thr | Glu  | Leu  | Glu | Lys | Arg | Ile  | Ile | Val | Asp |
| 1340 |       |      |     |     |     | 1345 |      |     |     |     | 1350 |     |     |     |
| Asp  | Thr   | Ser  | Thr | Gln | Trp | Ser  | Lys  | Asn | Met | Lys | His  | Leu | Thr | Pro |
| 1355 |       |      |     |     |     | 1360 |      |     |     |     | 1365 |     |     |     |
| Ser  | Thr   | Leu  | Thr | Gln | Ile | Asp  | Tyr  | Asn | Glu | Lys | Glu  | Lys | Gly | Ala |
| 1370 |       |      |     |     |     | 1375 |      |     |     |     | 1380 |     |     |     |
| Ile  | Thr   | Gln  | Ser | Pro | Leu | Ser  | Asp  | Cys | Leu | Thr | Arg  | Ser | His | Ser |
| 1385 |       |      |     |     |     | 1390 |      |     |     |     | 1395 |     |     |     |
| Ile  | Pro   | Gln  | Ala | Asn | Arg | Ser  | Pro  | Leu | Pro | Ile | Ala  | Lys | Val | Ser |
| 1400 |       |      |     |     |     | 1405 |      |     |     |     | 1410 |     |     |     |
| Ser  | Phe   | Pro  | Ser | Ile | Arg | Pro  | Ile  | Tyr | Leu | Thr | Arg  | Val | Leu | Phe |
| 1415 |       |      |     |     |     | 1420 |      |     |     |     | 1425 |     |     |     |
| Gln  | Asp   | Asn  | Ser | Ser | His | Leu  | Pro  | Ala | Ala | Ser | Tyr  | Arg | Lys | Lys |
| 1430 |       |      |     |     |     | 1435 |      |     |     |     | 1440 |     |     |     |
| Asp  | Ser   | Gly  | Val | Gln | Glu | Ser  | Ser  | His | Phe | Leu | Gln  | Gly | Ala | Lys |
| 1445 |       |      |     |     |     | 1450 |      |     |     |     | 1455 |     |     |     |
| Lys  | Asn   | Asn  | Leu | Ser | Leu | Ala  | Ile  | Leu | Thr | Leu | Glu  | Met | Thr | Gly |
| 1460 |       |      |     |     |     | 1465 |      |     |     |     | 1470 |     |     |     |

Asp Gln Arg Glu Val Gly Ser Leu Gly Thr Ser Ala Thr Asn Ser  
 1475 1480 1485  
 Val Thr Tyr Lys Lys Val Glu Asn Thr Val Leu Pro Lys Pro Asp  
 1490 1495 1500  
 Leu Pro Lys Thr Ser Gly Lys Val Glu Leu Leu Pro Lys Val His  
 1505 1510 1515  
 Ile Tyr Gln Lys Asp Leu Phe Pro Thr Glu Thr Ser Asn Gly Ser  
 1520 1525 1530  
 Pro Gly His Leu Asp Leu Val Glu Gly Ser Leu Leu Gln Gly Thr  
 1535 1540 1545  
 Glu Gly Ala Ile Lys Trp Asn Glu Ala Asn Arg Pro Gly Lys Val  
 1550 1555 1560  
 Pro Phe Leu Arg Val Ala Thr Glu Ser Ser Ala Lys Thr Pro Ser  
 1565 1570 1575  
 Lys Leu Leu Asp Pro Leu Ala Trp Asp Asn His Tyr Gly Thr Gln  
 1580 1585 1590  
 Ile Pro Lys Glu Glu Trp Lys Ser Gln Glu Lys Ser Pro Glu Lys  
 1595 1600 1605  
 Thr Ala Phe Lys Lys Asp Thr Ile Leu Ser Leu Asn Ala Cys  
 1610 1615 1620  
 Glu Ser Asn His Ala Ile Ala Ala Ile Asn Glu Gly Gln Asn Lys  
 1625 1630 1635  
 Pro Glu Ile Glu Val Thr Trp Ala Lys Gln Gly Arg Thr Glu Arg  
 1640 1645 1650  
 Leu Cys Ser Gln Asn Pro Pro Val Leu Lys Arg His Gln Arg Glu  
 1655 1660 1665  
 Ile Thr Arg Thr Thr Leu Gln Ser Asp Gln Glu Glu Ile Asp Tyr  
 1670 1675 1680  
 Asp Asp Thr Ile Ser Val Glu Met Lys Lys Glu Asp Phe Asp Ile  
 1685 1690 1695  
 Tyr Asp Glu Asp Glu Asn Gln Ser Pro Arg Ser Phe Gln Lys Lys  
 1700 1705 1710  
 Thr Arg His Tyr Phe Ile Ala Ala Val Glu Arg Leu Trp Asp Tyr  
 1715 1720 1725  
 Gly Met Ser Ser Ser Pro His Val Leu Arg Asn Arg Ala Gln Ser  
 1730 1735 1740  
 Gly Ser Val Pro Gln Phe Lys Lys Val Val Phe Gln Glu Phe Thr  
 1745 1750 1755  
 Asp Gly Ser Phe Thr Gln Pro Leu Tyr Arg Gly Glu Leu Asn Glu  
 1760 1765 1770

His Leu Gly Leu Leu Gly Pro Tyr Ile Arg Ala Glu Val Glu ASP  
 1775 1780 1785  
 Asn Ile Met Val Thr Phe Arg Asn Gln Ala Ser Arg Pro Tyr Ser  
 1790 1795 1800  
 Phe Tyr Ser Ser Leu Ile Ser Tyr Glu Glu Asp Gln Arg Gln Gly  
 1805 1810 1815  
 Ala Glu Pro Arg Lys Asn Phe Val Lys Pro Asn Glu Thr Lys Thr  
 1820 1825 1830  
 Tyr Phe Trp Lys Val Gln His His Met Ala Pro Thr Lys Asp Glu  
 1835 1840 1845  
 Phe Asp Cys Lys Ala Trp Ala Tyr Phe Ser Asp Val Asp Leu Glu  
 1850 1855 1860  
 Lys Asp Val His Ser Gly Leu Ile Gly Pro Leu Leu Val Cys His  
 1865 1870 1875  
 Thr Asn Thr Leu Asn Pro Ala His Gly Arg Gln Val Thr Val Gln  
 1880 1885 1890  
 Glu Phe Ala Leu Phe Phe Thr Ile Phe Asp Glu Thr Lys Ser Trp  
 1895 1900 1905  
 Tyr Phe Thr Glu Asn Met Glu Arg Asn Cys Arg Ala Pro Cys Asn  
 1910 1915 1920  
 Ile Gln Met Glu Asp Pro Thr Phe Lys Glu Asn Tyr Arg Phe His  
 1925 1930 1935  
 Ala Ile Asn Gly Tyr Ile Met Asp Thr Leu Pro Gly Leu Val Met  
 1940 1945 1950  
 Ala Gln Asp Gln Arg Ile Arg Trp Tyr Leu Leu Ser Met Gly Ser  
 1955 1960 1965  
 Asn Glu Asn Ile His Ser Ile His Phe Ser Gly His Val Phe Thr  
 1970 1975 1980  
 Val Arg Lys Lys Glu Glu Tyr Lys Met Ala Leu Tyr Asn Leu Tyr  
 1985 1990 1995  
 Pro Gly Val Phe Glu Thr Val Glu Met Leu Pro Ser Lys Ala Gly  
 2000 2005 2010  
 Ile Trp Arg Val Glu Cys Leu Ile Gly Glu His Leu His Ala Gly  
 2015 2020 2025  
 Met Ser Thr Leu Phe Leu Val Tyr Ser Asn Lys Cys Gln Thr Pro  
 2030 2035 2040  
 Leu Gly Met Ala Ser Gly His Ile Arg Asp Phe Gln Ile Thr Ala  
 2045 2050 2055  
 Ser Gly Gln Tyr Gly Gln Trp Ala Pro Lys Leu Ala Arg Leu His  
 2060 2065 2070  
 Tyr Ser Gly Ser Ile Asn Ala Trp Ser Thr Lys Glu Pro Phe Ser

| 2075  | 2080 | 2085 |
|---|------|------|
| Trp Ile Lys Val Asp Leu Leu Ala Pro Met Ile Ile His Gly Ile |      |      |
| 2090  | 2095 | 2100 |
| Lys Thr Gln Gly Ala Arg Gln Lys Phe Ser Ser Leu Tyr Ile Ser |      |      |
| 2105  | 2110 | 2115 |
| Gln Phe Ile Ile Met Tyr Ser Leu Asp Gly Lys Lys Trp Gln Thr |      |      |
| 2120  | 2125 | 2130 |
| Tyr Arg Gly Asn Ser Thr Gly Thr Leu Met Val Phe Phe Gly Asn |      |      |
| 2135  | 2140 | 2145 |
| Val Asp Ser Ser Gly Ile Lys His Asn Ile Phe Asn Pro Pro Ile |      |      |
| 2150  | 2155 | 2160 |
| Ile Ala Arg Tyr Ile Arg Leu His Pro Thr His Tyr Ser Ile Arg |      |      |
| 2165  | 2170 | 2175 |
| Ser Thr Leu Arg Met Glu Leu Met Gly Cys Asp Leu Asn Ser Cys |      |      |
| 2180  | 2185 | 2190 |
| Ser Met Pro Leu Gly Met Glu Ser Lys Ala Ile Ser Asp Ala Gln |      |      |
| 2195  | 2200 | 2205 |
| Ile Thr Ala Ser Ser Tyr Phe Thr Asn Met Phe Ala Thr Trp Ser |      |      |
| 2210  | 2215 | 2220 |
| Pro Ser Lys Ala Arg Leu His Leu Gln Gly Arg Ser Asn Ala Trp |      |      |
| 2225  | 2230 | 2235 |
| Arg Pro Gln Val Asn Asn Pro Lys Glu Trp Leu Gln Val Asp Phe |      |      |
| 2240  | 2245 | 2250 |
| Gln Lys Thr Met Lys Val Thr Gly Val Thr Thr Gln Gly Val Lys |      |      |
| 2255  | 2260 | 2265 |
| Ser Leu Leu Thr Ser Met Tyr Val Lys Glu Phe Leu Ile Ser Ser |      |      |
| 2270  | 2275 | 2280 |
| Ser Gln Asp Gly His Gln Trp Thr Leu Phe Phe Gln Asn Gly Lys |      |      |
| 2285  | 2290 | 2295 |
| Val Lys Val Phe Gln Gly Asn Gln Asp Ser Phe Thr Pro Val Val |      |      |
| 2300  | 2305 | 2310 |
| Asn Ser Leu Asp Pro Pro Leu Leu Thr Arg Tyr Leu Arg Ile His |      |      |
| 2315  | 2320 | 2325 |
| Pro Gln Ser Trp Val His Gln Ile Ala Leu Arg Met Glu Val Leu |      |      |
| 2330  | 2335 | 2340 |
| Gly Cys Glu Ala Gln Asp Leu Tyr                             |      |      |
| 2345  | 2350 |      |

&lt;210&gt; 31

&lt;211&gt; 1471

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 31

atggcgcccg tcgcccgtctg ggccgcgcgtg gccgtcggac tggagctctg ggctgcggcg  
60cacgccttgc ccgcccaggt ggcatttaca ccctacgcgc cggagccccg gagcacatgc  
120cggctcagag aatactatga ccagacagct cagatgtgct gcagcaaatg ctgcggggc  
180caacatgcaa aagtcttctg taccaagacc tcggacaccc tggtgtactc ctgtgaggac  
240agcacataca cccagctctg gaactgggtt cccgagtgct tgagctgtgg ctcccgctgt  
300agctctgacc aggtggaaac tcaaggctgc actcgaaac agaaccgcac ctgcacctgc  
360aggccccgtt ggtactgcgc gctgagcaag caggaggggt gccggctgtg cgccgcgcgtg  
420cgcaagtgcc gcccgggtt cggcgtggcc agaccaggaa ctgaaacatc agacgtgttg  
480tgcaaggccct gtgccccggg gacgttctcc aacacgactt catccacgga tatttgcagg  
540ccccaccaga tctgtaacgt ggtggccatc cttggaaatg caagcatgga tgcagtctgc  
600acgtccacgt ccccccacccg gagtatggcc ccagggcag tacacttacc ccagccagtg  
660tccacacgat cccaacacac gcagccaaact ccagaaccca gcactgtctcc aagcacctcc  
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1200

gccagctcca caatgggaga cacagattcc agccccctgg agtccccgaa ggacayayay  
1260

gtcccccttct ccaaggagga atgtgccttt cggtcacagc tggagacgcc agagaccctg  
1320

ctggggagca ccgaagagaa gcccctgccc ctggagtgctgatgctgg gatgaagccc  
1380

agttaaccag gccgggtgtgg gctgtgtcgt agccaagggtg ggctgagccc tggcaggatg  
1440

accctgcgaa gggccctgg tccttccagg c  
1471

<210> 32  
<211> 461  
<212> PRT  
<213> Homo sapiens

<400> 32  
Met Ala Pro Val Ala Val Trp Ala Ala Leu Ala Val Gly Leu Glu Leu  
1 5 10 15

Trp Ala Ala Ala His Ala Leu Pro Ala Gln Val Ala Phe Thr Pro Tyr  
20 25 30

Ala Pro Glu Pro Gly Ser Thr Cys Arg Leu Arg Glu Tyr Tyr Asp Gln  
35 40 45

Thr Ala Gln Met Cys Cys Ser Lys Cys Ser Pro Gly Gln His Ala Lys  
50 55 60

Val Phe Cys Thr Lys Thr Ser Asp Thr Val Cys Asp Ser Cys Glu Asp  
65 70 75 80

Ser Thr Tyr Thr Gln Leu Trp Asn Trp Val Pro Glu Cys Leu Ser Cys  
85 90 95

Gly Ser Arg Cys Ser Ser Asp Gln Val Glu Thr Gln Ala Cys Thr Arg  
100 105 110

Glu Gln Asn Arg Ile Cys Thr Cys Arg Pro Gly Trp Tyr Cys Ala Leu  
115 120 125

Ser Lys Gln Glu Gly Cys Arg Leu Cys Ala Pro Leu Arg Lys Cys Arg  
130 135 140

Pro Gly Phe Gly Val Ala Arg Pro Gly Thr Glu Thr Ser Asp Val Val  
145 150 155 160

Cys Lys Pro Cys Ala Pro Gly Thr Phe Ser Asn Thr Thr Ser Ser Thr  
165 170 175

Asp Ile Cys Arg Pro His Gln Ile Cys Asn Val Val Ala Ile Pro Gly  
180 185 190

Asn Ala Ser Met Asp Ala Val Cys Thr Ser Thr Ser Pro Thr Arg Ser  
195 200 205

Met Ala Pro Gly Ala Val His Leu Pro Gln Pro Val Ser Thr Arg Ser

210

215

220

Gln His Thr Gln Pro Thr Pro Glu Pro Ser Thr Ala Pro Ser Thr Ser :  
 225 230 235 240

Phe Leu Leu Pro Met Gly Pro Ser Pro Pro Ala Glu Gly Ser Thr Gly  
 245 250 255

Asp Phe Ala Leu Pro Val Gly Leu Ile Val Gly Val Thr Ala Leu Gly  
 260 265 270

Leu Leu Ile Ile Gly Val Val Asn Cys Val Ile Met Thr Gln Val Lys  
 275 280 285

Lys Lys Pro Leu Cys Leu Gln Arg Glu Ala Lys Val Pro His Leu Pro  
 290 295 300

Ala Asp Lys Ala Arg Gly Thr Gln Gly Pro Glu Gln Gln His Leu Leu  
 305 310 315 320

Ile Thr Ala Pro Ser Ser Ser Ser Ser Leu Glu Ser Ser Ala Ser :  
 325 330 335

Ala Leu Asp Arg Arg Ala Pro Thr Arg Asn Gln Pro Gln Ala Pro Gly  
 340 345 350

Val Glu Ala Ser Gly Ala Gly Glu Ala Arg Ala Ser Thr Gly Ser Ser :  
 355 360 365

Asp Ser Ser Pro Gly Gly His Gly Thr Gln Val Asn Val Thr Cys Ile  
 370 375 380

Val Asn Val Cys Ser Ser Ser Asp His Ser Ser Gln Cys Ser Ser Gln  
 385 390 395 400

Ala Ser Ser Thr Met Gly Asp Thr Asp Ser Ser Pro Ser Glu Ser Pro  
 405 410 415

Lys Asp Glu Gln Val Pro Phe Ser Lys Glu Glu Cys Ala Phe Arg Ser :  
 420 425 430

Gln Leu Glu Thr Pro Glu Thr Leu Leu Gly Ser Thr Glu Glu Lys Pro  
 435 440 445

Leu Pro Leu Gly Val Pro Asp Ala Gly Met Lys Pro Ser  
 450 455 460

<210> 33

<211> 1475

<212> DNA

<213> Homo sapiens

<400> 33

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 60

agcgccccga cctcgccacc atgagagccc tgctggcgccg cctgtttctc tgcgtctgg  
 120

tcgtgagcga ctccaaaggc agcaatgaac ttcatcaagt tccatcgaac tgtgactgtc  
 180

taaatggagg aacatgtgtg tccaacaagt acttctccaa cattcactgg tgcaactgcc  
240  
caaagaaatt cgaggaggcag cactgtgaaa tagataagtc aaaaacctgc tatgagggga  
300  
atggtcactt ttaccgagga aaggccagca ctgacaccat gggccggccc tgccctgcct  
360  
ggaactctgc cactgtcctt cagcaaacgt accatgccca cagatctgat gctcttcagc  
420  
tggcctggg gaaacataat tactgcagga acccagacaa ccggaggcga ccctggtgct  
480  
atgtgcaggt gggcctaaag ccgcgttgtcc aagagtgcac ggtgcacatgac tgcgcatgc  
540  
aaaaaaagcc ctcccttcct ccagaagaat taaaattca gtgtggccaa aagactctga  
600  
ggccccgctt taagattattt gggggagaat tcaccaccat cgagaaccag ccctggtttg  
660  
cgcccatcta caggaggcac cggggggct ctgtcaccta cgtgtgtgga ggcagccotca  
720  
tcagcccttg ctgggtgatc agcgccacac actgcattcat tgattaccca aagaaggagg  
780  
actacatcgt ctacctgggt cgctcaaggc ttaactccaa cacgcaagg gagatgaagt  
840  
ttgaggtgga aaacctcatc ctacacaagg actacagcgc tgacacgctt gtcaccaca  
900  
acgacattgc ctgctgaag atccgttcca aggagggcag gtgtgcgcag ccattccggaa  
960  
ctatacagac catctgcctg ccctcgatgt ataacgatcc ccagttggc acaagctgtg  
1020  
agatcactgg ctttgaaaaa gagaattcta ccgactatct ctatccggag cagctgaaga  
1080  
tgactgtgt gaagctgatt tcccaccggg agtgcagca gccccactac tacggctctg  
1140  
aagtccaccac caaaatgctg tgtgctgctg acccacagtg gaaaacagat tcctgcagg  
1200  
gagactcagg gggaccctc gtctgttccc tccaaggccg catgactttg actggaatttg  
1260  
tgagctgggg ccgtggatgt gccctgaagg acaagccagg cgtctacacg agagtctcac  
1320  
acttcttacc ctggatccgc agtcacacca aggaagagaa tggcctggcc ctctgagggt  
1380

ccccagggag gaaacgggca ccacccgctt tcttgctgggt tgtcattttt gcagtagagt  
1440

catctccatc agctgtaaga agagactggg aagat  
1475

<210> 34  
<211> 431  
<212> PRT  
<213> Homo sapiens

<400> 34  
Met Arg Ala Leu Leu Ala Arg Leu Leu Leu Cys Val Ile Val Val Ser  
1 5 10 15

Asp Ser Lys Gly Ser Asn Glu Leu His Gln Val Pro Ser Asn Cys Asp  
20 25 30

Cys Leu Asn Gly Gly Thr Cys Val Ser Asn Lys Tyr Phe Ser Asn Ile  
35 40 45

His Trp Cys Asn Cys Pro Lys Lys Phe Gly Gly Gln His Cys Glu Ile  
50 55 60

Asp Lys Ser Lys Thr Cys Tyr Glu Gly Asn Gly His Phe Tyr Arg Gly  
65 70 75 80

Lys Ala Ser Thr Asp Thr Met Gly Arg Pro Cys Leu Pro Trp Asn Ser  
85 90 95

Ala Thr Val Leu Gln Gln Thr Tyr His Ala His Arg Ser Asp Ala Leu  
100 105 110

Gln Leu Gly Leu Gly Lys His Asn Tyr Cys Arg Asn Pro Asp Asn Arg  
115 120 125

Arg Arg Pro Trp Cys Tyr Val Gln Val Gly Leu Lys Pro Leu Val Gln  
130 135 140

Glu Cys Met Val His Asp Cys Ala Asp Gly Lys Lys Pro Ser Ser Pro  
145 150 155 160

Pro Glu Glu Leu Lys Phe Gln Cys Gly Gln Lys Thr Leu Arg Pro Arg  
165 170 175

Phe Lys Ile Ile Gly Gly Glu Phe Thr Thr Ile Glu Asn Gln Pro Trp  
180 185 190

Phe Ala Ala Ile Tyr Arg Arg His Arg Gly Ser Val Thr Tyr Val  
195 200 205

Cys Gly Gly Ser Leu Ile Ser Pro Cys Trp Val Ile Ser Ala Thr His  
210 215 220

Cys Phe Ile Asp Tyr Pro Lys Lys Glu Asp Tyr Ile Val Tyr Leu Gly  
225 230 235 240

Arg Ser Arg Leu Asn Ser Asn Thr Gln Gly Glu Met Lys Phe Glu Val  
245 250 255

Glu Asn Leu Ile Leu His Lys Asp Tyr Ser Ala Asp Thr Leu Ala His

260

265

270

His Asn Asp Ile Ala Leu Leu Lys Ile Arg Ser Lys Glu Gly Arg Cys  
 275 280 285

Ala Gln Pro Ser Arg Thr Ile Gln Thr Ile Cys Leu Pro Ser Met Tyr  
 290 295 300

Asn Asp Pro Gln Phe Gly Thr Ser Cys Glu Ile Thr Gly Phe Gly Lys  
 305 310 315 320

Glu Asn Ser Thr Asp Tyr Leu Tyr Pro Glu Gln Leu Lys Met Thr Val  
 325 330 335

Val Lys Leu Ile Ser His Arg Glu Cys Gln Gln Pro His Tyr Tyr Gly  
 340 345 350

Ser Glu Val Thr Thr Lys Met Leu Cys Ala Ala Asp Pro Gln Trp Lys  
 355 360 365

Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Ser Leu  
 370 375 380

Gln Gly Arg Met Thr Leu Thr Gly Ile Val Ser Trp Gly Arg Gly Cys  
 385 390 395 400

Ala Leu Lys Asp Lys Pro Gly Val Tyr Thr Arg Val Ser His Phe Leu  
 405 410 415

Pro Trp Ile Arg Ser His Thr Lys Glu Glu Asn Gly Leu Ala Leu  
 420 425 430

&lt;210&gt; 35

&lt;211&gt; 107

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 35

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Val Asn Thr Ala  
 20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile  
 35 40 45

Tyr Ser Ala Ser Phe Leu Tyr Ser Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro  
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro  
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys  
 100 105

&lt;210&gt; 36

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 36

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | Gly |
| 1   |     |     |     |     | 5   |     |     |     |     | 10  |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Phe | Asn | Ile | Lys | Asp | Thr |
|     |     |     |     |     |     |     |     | 20  |     | 25  |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Ile | His | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | Glu | Trp | Val |
|     |     |     |     |     |     |     |     | 35  |     | 40  |     |     | 45  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Arg | Ile | Tyr | Pro | Thr | Asn | Gly | Tyr | Thr | Arg | Tyr | Ala | Asp | Ser | Val |
|     |     |     |     |     |     |     | 50  |     | 55  |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Gly | Arg | Phe | Thr | Ile | Ser | Ala | Asp | Thr | Ser | Lys | Asn | Thr | Ala | Tyr |
|     |     |     |     |     |     |     | 65  |     | 70  |     | 75  |     | 80  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | Thr | Ala | Val | Tyr | Tyr | Cys |
|     |     |     |     |     |     |     | 85  |     | 90  |     | 95  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Arg | Trp | Gly | Gly | Asp | Gly | Phe | Tyr | Ala | Met | Asp | Tyr | Trp | Gly | Gln |
|     |     |     |     |     | 100 |     |     |     |     | 105 |     |     | 110 |     |     |

|     |     |     |     |     |     |     |     |     |  |  |  |  |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|--|
| Gly | Thr | Leu | Val | Thr | Val | Ser | Ser |     |  |  |  |  |  |  |
|     |     |     |     |     |     | 115 |     | 120 |  |  |  |  |  |  |

&lt;210&gt; 37

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 37

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Val | Thr | Leu | Arg | Glu | Ser | Gly | Pro | Ala | Leu | Val | Lys | Pro | Thr | Gln |
| 1   |     |     |     |     |     |     | 5   |     | 10  |     |     | 15  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Leu | Thr | Leu | Thr | Cys | Thr | Phe | Ser | Gly | Phe | Ser | Leu | Ser | Thr | Ser |
|     |     |     |     |     |     |     | 20  |     | 25  |     | 30  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Met | Ser | Val | Gly | Trp | Ile | Arg | Gln | Pro | Ser | Gly | Lys | Ala | Leu | Glu |
|     |     |     |     |     |     |     | 35  |     | 40  |     | 45  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Leu | Ala | Asp | Ile | Trp | Trp | Asp | Asp | Lys | Lys | Asp | Tyr | Asn | Pro | Ser |
|     |     |     |     |     |     |     | 50  |     | 55  |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Lys | Ser | Arg | Leu | Thr | Ile | Ser | Lys | Asp | Thr | Ser | Lys | Asn | Gln | Val |
|     |     |     |     |     |     |     | 65  |     | 70  |     | 75  |     | 80  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Leu | Lys | Val | Thr | Asn | Met | Asp | Pro | Ala | Asp | Thr | Ala | Thr | Tyr | Tyr |
|     |     |     |     |     |     |     | 85  |     | 90  |     | 95  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Ala | Arg | Ser | Met | Ile | Thr | Asn | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Ala |
|     |     |     |     |     |     |     | 100 |     | 105 |     | 110 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |  |  |  |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|
| Gly | Thr | Thr | Val | Thr | Val | Ser | Ser |     |  |  |  |  |  |
|     |     |     |     |     |     | 115 |     | 120 |  |  |  |  |  |

&lt;210&gt; 38

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 38

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Thr | Leu | Ser | Ala | Ser | Val | Gly |
| 1   |     |     |     |     | 5   |     |     |     |     | 10  |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Arg | Val | Thr | Ile | Thr | Cys | Cys | Gln | Leu | Ser | Val | Gly | Tyr | Met |
|     |     |     |     |     |     | 20  |     | 25  |     |     | 30  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | Leu | Trp | Ile | Tyr |
|     |     |     |     |     | 35  |     | 40  |     | 45  |     |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Thr | Ser | Lys | Leu | Ala | Ser | Gly | Val | Pro | Ser | Arg | Phe | Ser | Gly | Ser |
|     |     |     |     |     | 50  |     | 55  |     | 60  |     |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Ser | Gly | Thr | Glu | Phe | Thr | Leu | Thr | Ile | Ser | Ser | Leu | Gln | Pro | Asp |
|     |     |     |     |     | 65  |     | 70  |     | 75  |     | 80  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Phe | Gln | Gly | Ser | Gly | Tyr | Pro | Phe | Thr |
|     |     |     |     |     |     | 85  |     | 90  |     | 95  |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Gly | Gly | Gly | Thr | Lys | Leu | Glu | Ile | Lys |
|     |     |     |     |     | 100 |     | 105 |     |     |

&lt;210&gt; 39

&lt;211&gt; 1039

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 39

|            |            |            |            |            |           |
|------------|------------|------------|------------|------------|-----------|
| tcctgcacag | gcagtgcctt | gaagtgcctc | ttcagagacc | tttcttcata | gactacttt |
| 60         |            |            |            |            |           |

|           |            |            |            |            |            |
|-----------|------------|------------|------------|------------|------------|
| ttttcttaa | gcagcaaaag | gagaaaattt | tcatcaaagg | atattccaga | ttcttgacag |
| 120       |            |            |            |            |            |

|          |            |            |           |           |          |
|----------|------------|------------|-----------|-----------|----------|
| cattctcg | atctctgagg | acatcaccat | catctcagg | tgagggcat | gaagctgt |
| 180      |            |            |           |           |          |

|            |            |            |            |            |             |
|------------|------------|------------|------------|------------|-------------|
| ggggcgctgc | tggcactggc | ggccctactg | cagggggccg | tgtccctgaa | gatcgacagcc |
| 240        |            |            |            |            |             |

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| ttcaacatcc | agacatttgg | ggagaccaag | atgtccaatg | ccaccctcgt | cagctacatt |
| 300        |            |            |            |            |            |

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| gtgcagatcc | ttagccgcta | tgacatcgcc | ctggtccagg | aggtcagaga | cagccacctg |
| 360        |            |            |            |            |            |

|            |           |            |            |            |        |
|------------|-----------|------------|------------|------------|--------|
| actgccgtgg | ggaagctgt | ggacaacctc | aatcaggatg | caccagacac | ctatca |
| 420        |           |            |            |            |        |

|           |            |            |            |            |            |
|-----------|------------|------------|------------|------------|------------|
| gtggtcagt | agccactggg | acggaacagc | tataaggagc | gctacctgtt | cgtgtacagg |
| 480       |            |            |            |            |            |

|            |           |            |            |            |            |
|------------|-----------|------------|------------|------------|------------|
| cctgaccagg | tgtctgcgg | ggacagctac | tactacgatg | atggctgcga | gccctgcggg |
| 540        |           |            |            |            |            |

|          |            |            |        |            |          |
|----------|------------|------------|--------|------------|----------|
| aacgacac | tcaaccgaga | gccagccatt | gtcagg | tctcccggtt | cacagagg |
| 600      |            |            |        |            |          |

agggagtttg ccattgttcc cctgcatgog gccccggggg acgcagtagc cgagatcgac  
660

gctctctatg acgtctacct ggatgtccaa gagaaatggg gcttggagga cgtcatgtt  
720

atgggcgact tcaatgcggg ctgcagctat gtgagaccct cccagtggtc atccatcogc  
780

ctgtggacaa gccccacatt ccagtggctg atccccgaca gcgctgacac cacagctaca  
840

cccacgcact gtgcctatga caggatcggt gttgcaggga tgctgctccg aggccgcgtt  
900

gttcccgcact cggctttcc cttaacttc caggctgcct atggcctgag tgaccaactg  
960

gcccaaggca tcagtgacca ctatccagtg gaggtgatgc tgaagtgagc agccctccc  
1020

cacaccagtt gaactgcag  
1039

<210> 40

<211> 282

<212> PRT

<213> Homo sapiens

<400> 40

Met Arg Gly Met Lys Leu Leu Gly Ala Leu Leu Ala Leu Ala Leu  
1 5 10 15

Leu Gln Gly Ala Val Ser Leu Lys Ile Ala Ala Phe Asn Ile Gln Thr  
20 25 30

Phe Gly Glu Thr Lys Met Ser Asn Ala Thr Leu Val Ser Tyr Ile Val  
35 40 45

Gln Ile Leu Ser Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp  
50 55 60

Ser His Leu Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp  
65 70 75 80

Ala Pro Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn  
85 90 95

Ser Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser  
100 105 110

Ala Val Asp Ser Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly Asn  
115 120 125

Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser Arg Phe  
130 135 140

Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala Ala Pro Gly  
145 150 155 160

Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val Tyr Leu Asp Val

165

170

175

Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu Met Gly Asp Phe Asn  
 180 185 190

Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln Trp Ser Ser Ile Arg Leu  
 195 200 205

Trp Thr Ser Pro Thr Phe Gln Trp Leu Ile Pro Asp Ser Ala Asp Thr  
 210 215 220

Thr Ala Thr Pro Thr His Cys Ala Tyr Asp Arg Ile Val Val Ala Gly  
 225 230 235 240

Met Leu Leu Arg Gly Ala Val Val Pro Asp Ser Ala Leu Pro Phe Asn  
 245 250 255

Phe Gln Ala Ala Tyr Gly Leu Ser Asp Gln Leu Ala Gln Ala Ile Ser  
 260 265 270

Asp His Tyr Pro Val Glu Val Met Leu Lys  
 275 280

&lt;210&gt; 41

&lt;211&gt; 678

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;400&gt; 41

gacatcttgc tgactcagtc tccagccatc ctgtctgtga gtccaggaga aagagtca  
 60

tttccttgca gggccagtca gttcggtggc tcaagcatcc actggatataca gcaaagaaca  
 120

aatggttctc caaggcttct cataaagtat gcttctgagt ctatgtctgg gatcccttcc  
 180

aggtttagtg gcagtggatc agggacagat tttactctta gcatcaacac tgtggagtct  
 240

gaagatattt cagattatta ctgtcaacaa agtcatagct ggccattcac gttcggctcg  
 300

gggacaaatt tggaaagtaaa agaagtgaag cttgaggagt ctggaggagg cttgggtgcaa  
 360

cctggaggat ccatgaaact ctcctgtgtt gcctctggat tcattttcag taaccactgg  
 420

atgaactggg tccgccagtc tccagagaag gggcttgagt gggttgctga aattagatca  
 480

aatcttatta attctgcaac acattatgcg gagtctgtga aaggaggattt caccatctca  
 540

agagatgatt ccaaaaagtgc tgtctacctg caaatgaccg acttaagaac tgaagacact  
 600

ggcgtttattt actgttccag gaattactac ggttagtacct acgactactg gggccaaggc  
 660

accactctca cagtctcc  
678

<210> 42

<211> 226

<212> PRT

<213> Mus musculus

<400> 42

Asp Ile Leu Leu Thr Gln Ser Pro Ala Ile Leu Ser Val Ser Pro Gly  
1 5 10 15

Glu Arg Val Ser Phe Ser Cys Arg Ala Ser Gln Phe Val Gly Ser Ser  
20 25 30

Ile His Trp Tyr Gln Gln Arg Thr Asn Gly Ser Pro Arg Leu Leu Ile  
35 40 45

Lys Tyr Ala Ser Glu Ser Met Ser Gly Ile Pro Ser Arg Phe Ser Gly  
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Thr Val Glu Ser  
65 70 75 80

Glu Asp Ile Ala Asp Tyr Tyr Cys Gln Gln Ser His Ser Trp Pro Phe  
85 90 95

Thr Phe Gly Ser Gly Thr Asn Leu Glu Val Lys Glu Val Lys Leu Glu  
100 105 110

Glu Ser Gly Gly Leu Val Gln Pro Gly Gly Ser Met Lys Leu Ser  
115 120 125

Cys Val Ala Ser Gly Phe Ile Phe Ser Asn His Trp Met Asn Trp Val  
130 135 140

Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val Ala Glu Ile Arg Ser  
145 150 155 160

Lys Ser Ile Asn Ser Ala Thr His Tyr Ala Glu Ser Val Lys Gly Arg  
165 170 175

Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ala Val Tyr Leu Gln Met  
180 185 190

Thr Asp Leu Arg Thr Glu Asp Thr Gly Val Tyr Tyr Cys Ser Arg Asn  
195 200 205

Tyr Tyr Gly Ser Thr Tyr Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr  
210 215 220

Val Ser  
225

<210> 43

<211> 450

<212> DNA

<213> Homo sapiens

<400> 43

gctgcacatcg aagaggccat caagcacatc actgtcccttc tgccatggcc ctgtggatgc  
60

gcctcctgcc cctgctggcg ctgtgtggccc tctggggacc tgaccaggcc gcagcccttg  
120

tgaaccaaca cctgtgcggc tcacacactgg tggaaagctct ctaccttagtg tgccccggaaac  
180

gaggctttctt ctacacacccc aagaccggcc gggaggcaga ggacotgcag gtggggcagg  
240

tggagctggg cggggccct ggtgcaggca gcctgcagcc ctggccctg gaggggtccc  
300

tgcagaagcg tggcattgtg gaacaatgtt gtaccagcat ctgctccctc taccagctgg  
360

agaactactg caactagacg cagcccgagc gcagcccccc acccgccgccc tcctgcacccg  
420

agagagatgg aataaagccc ttgtaccaggc  
450

<210> 44

<211> 110

<212> PRT

<213> Homo sapiens

<400> 44

Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu  
1 5 10 15

Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn Gln His Leu Cys Gly  
20 25 30

Ser His Leu Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe  
35 40 45

Phe Tyr Thr Pro Lys Thr Arg Arg Glu Ala Glu Asp Leu Gln Val Gly  
50 55 60

Gln Val Glu Leu Gly Gly Pro Gly Ala Gly Ser Leu Gln Pro Leu  
65 70 75 80

Ala Leu Glu Gly Ser Leu Gln Lys Arg Gly Ile Val Glu Gln Cys Cys  
85 90 95

Thr Ser Ile Cys Ser Leu Tyr Gln Leu Glu Asn Tyr Cys Asn  
100 105 110

<210> 45

<211> 1203

<212> DNA

<213> Hepatitis B virus

<400> 45

atgggaggtt ggtcttccaa acctcgacaa ggcatgggg cgaatctttc tggccat

60

cctctggat tcttcccga tcaccagttg gaccctgcgt tcggagccaa ctcaccaaa  
120  
  
ccagatggg acttcaaccc caacaaggat cactggccag aggcaatcaa ggtaggagcg  
180  
  
ggagacttag ggccagggtt cacccacca cacggcggtc ttttggggtg gagccctcag  
240  
  
gctcaggca tattgacaac agtgcacca gcgcctcctc ctgttccac caatcgccag  
300  
  
tcaggaagac agcctactcc catctctcca cctctaagag acagtcatcc tcaggccatg  
360  
  
cagtggact ccacaacatt ccaccaagct ctgctagatc ccagagttag gggcctata  
420  
  
tttcctgctg gtggctccag ttccggaca gtaaacccctg ttccgactac tgtctcaccc  
480  
  
atatcgtaa tcttctcgag gactggggac cctgcacccga acatggagag cacaacatca  
540  
  
ggattccctag gaccctgtc cgtgttacag gccccgtttt tcttggac aagaatcctc  
600  
  
acaataccac agagtctaga ctcgtggtgg acttctctca attttcttagg gggagccaccc  
660  
  
acgtgtctg gccaaaattc gcagtccttca acctccaatc actcaccaac ctcttgtcat  
720  
  
ccaatttgtc ctggttatcg ctggatgtgt ctgcggcggtt ttatcatatt cctcttcatc  
780  
  
ctgctgtat gcctcatctt ttgttgggtt cttctggact accaaggat gttgcccggtt  
840  
  
tgtcctctac ttccaggaac atcaactacc agcacgggac catgcaagac ctgcacgatt  
900  
  
cctgctcaag gaacctctat gttccctct tggtgctgtt caaaaccttc ggacggaaac  
960  
  
tgcacttgtt ttcccatccc atcatctgg gcttcgcac gattcctatg ggagtgggccc  
1020  
  
tcagtcgtt tctctgggtt cagtttacta gtgcatttg ttcaagtgggtt cgccaggcggtt  
1080  
  
tccccactg ttggctttc agttatatgg atgatgtggt attgggggcc aagtctgtac  
1140  
  
aacatcttga gtccctttt acctcttatta ccaattttct tttgttggt ggtatacatt  
1200  
  
tga  
1203

&lt;211&gt; 400

&lt;212&gt; PRT

&lt;213&gt; Hepatitis B virus

&lt;400&gt; 46

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Gly | Gly | Trp | Ser | Ser | Lys | Pro | Arg | Gln | Gly | Met | Gly | Thr | Asn | Leu |
| 1   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 10  | 15  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Val | Pro | Asn | Pro | Leu | Gly | Phe | Phe | Pro | Asp | His | Gln | Leu | Asp | Pro |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 25  | 30  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Phe | Gly | Ala | Asn | Ser | Asn | Asn | Pro | Asp | Trp | Asp | Phe | Asn | Pro | Asn |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 35  | 40  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Asp | His | Trp | Pro | Glu | Ala | Ile | Lys | Val | Gly | Ala | Gly | Asp | Phe | Gly |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 50  | 55  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Gly | Phe | Thr | Pro | Pro | His | Gly | Gly | Leu | Leu | Gly | Trp | Ser | Pro | Gln |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 65  | 70  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Gln | Gly | Ile | Leu | Thr | Thr | Val | Pro | Ala | Ala | Pro | Pro | Pro | Val | Ser |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 85  | 90  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Asn | Arg | Gln | Ser | Gly | Arg | Gln | Pro | Thr | Pro | Ile | Ser | Pro | Pro | Leu |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 100 | 105 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Asp | Ser | His | Pro | Gln | Ala | Met | Gln | Trp | Asn | Ser | Thr | Thr | Phe | His |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 115 | 120 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ala | Leu | Leu | Asp | Pro | Arg | Val | Arg | Gly | Leu | Tyr | Phe | Pro | Ala | Gly |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 130 | 135 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Ser | Ser | Ser | Gly | Thr | Val | Asn | Pro | Val | Pro | Thr | Thr | Val | Ser | Pro |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 145 | 150 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ser | Ser | Ile | Phe | Ser | Arg | Thr | Gly | Asp | Pro | Ala | Pro | Asn | Met | Glu |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 165 | 170 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Thr | Thr | Ser | Gly | Phe | Leu | Gly | Pro | Leu | Leu | Val | Leu | Gln | Ala | Gly |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 180 | 185 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Phe | Leu | Leu | Thr | Arg | Ile | Leu | Thr | Ile | Pro | Gln | Ser | Leu | Asp | Ser |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 195 | 200 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Trp | Thr | Ser | Leu | Asn | Phe | Leu | Gly | Ala | Pro | Thr | Cys | Pro | Gly |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 210 | 215 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Asn | Ser | Gln | Ser | Pro | Thr | Ser | Asn | His | Ser | Pro | Thr | Ser | Cys | Pro |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 225 | 230 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Ile | Cys | Pro | Gly | Tyr | Arg | Trp | Met | Cys | Leu | Arg | Arg | Phe | Ile | Ile |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 245 | 250 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Leu | Phe | Ile | Leu | Leu | Cys | Leu | Ile | Phe | Leu | Leu | Val | Leu | Leu |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 260 | 265 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Tyr | Gln | Gly | Met | Leu | Pro | Val | Cys | Pro | Leu | Leu | Pro | Gly | Thr | Ser |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 275 | 280 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Thr | Ser | Thr | Gly | Pro | Cys | Lys | Thr | Cys | Thr | Ile | Pro | Ala | Gln | Gly |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     | 290 | 295 |

Thr Ser Met Phe Pro Ser Cys Cys Cys Thr Lys Pro Ser Asp Gly Asn  
305 310 315 320

Cys Thr Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Arg Phe Leu  
325 330 335

Trp Glu Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro  
340 345 350

Phe Val Gln Trp Phe Ala Gly Leu Ser Pro Thr Val Trp Leu Ser Val  
355 360 365

Ile Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Asn Ile Leu Ser  
370 375 380

Pro Phe Leu Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile  
385 390 395 400

<210> 47  
<211> 799  
<212> DNA  
<213> Homo sapiens

<400> 47  
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120  
cccaaccatt cccttatcca ggccttttga caacgctatg ctccggggccc atcgctcgca  
180  
ccagctggcc tttgacacct accaggagtt tgaagaagcc tatatccaa aggaacagaa  
240  
gtattcattc ctgcagaacc cccagacactc cctctgttgc tcagagtcta ttccgacacc  
300  
ctccaacagg gagaaacac aacagaaatc caaccttagag ctgctccgca tctccatgct  
360  
gctcatccag tcgtggctgg agcccggtca gttccctcagg agtgttccg ccaacagcc  
420  
gttgtacggc gcctctgaca gcaacgtcta tgacccctta aaggacctag aggaaggcat  
480  
ccaaacgctg atggggaggc tggaagatgg cagccccgg actggggcaga tcttcaagca  
540  
gacctacagg aagttcgaca caaactcaca caacgatgac gcactactca agaactacgg  
600  
gtgtctac tgcttcagga aggacatgga caaggtcgag acattccgtc gcatogtgca  
660  
gtgccgtct gtggagggca gctgtggctt ctagctgccc gggtggcata cctgtgaccc  
720

ctccccagtg ccttcctgg ccctggaagt tgccactcca gtgccacca gccttgtcct  
780

aataaaatta agttgcattc  
799

<210> 48  
<211> 217  
<212> PRT  
<213> Homo sapiens

<400> 48  
Met Ala Thr Gly Ser Arg Thr Ser Leu Leu Leu Ala Phe Gly Leu Leu  
1 5 10 15

Cys Leu Pro Trp Leu Gln Glu Gly Ser Ala Phe Pro Thr Ile Pro Leu  
20 25 30

Ser Arg Pro Phe Asp Asn Ala Met Leu Arg Ala His Arg Leu His Gln  
35 40 45

Leu Ala Phe Asp Thr Tyr Gln Glu Phe Glu Ala Tyr Ile Pro Lys  
50 55 60

Glu Gln Lys Tyr Ser Phe Leu Gln Asn Pro Gln Thr Ser Leu Cys Phe  
65 70 75 80

Ser Glu Ser Ile Pro Thr Pro Ser Asn Arg Glu Glu Thr Gln Gln Lys  
85 90 95

Ser Asn Leu Glu Leu Leu Arg Ile Ser Leu Leu Leu Ile Gln Ser Trp  
100 105 110

Leu Glu Pro Val Gln Phe Leu Arg Ser Val Phe Ala Asn Ser Leu Val  
115 120 125

Tyr Gly Ala Ser Asp Ser Asn Val Tyr Asp Leu Leu Lys Asp Leu Glu  
130 135 140

Glu Gly Ile Gln Thr Leu Met Gly Arg Leu Glu Asp Gly Ser Pro Arg  
145 150 155 160

Thr Gly Gln Ile Phe Lys Gln Thr Tyr Ser Lys Phe Asp Thr Asn Ser  
165 170 175

His Asn Asp Asp Ala Leu Leu Lys Asn Tyr Gly Leu Leu Tyr Cys Phe  
180 185 190

Arg Lys Asp Met Asp Lys Val Glu Thr Phe Leu Arg Ile Val Gln Cys  
195 200 205

Arg Ser Val Glu Gly Ser Cys Gly Phe  
210 215

<210> 49  
<211> 963  
<212> DNA  
<213> Homo sapiens

<400> 49

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120

gtcccggccg agtgcttcga cctgctggtc cgccactgcg tggcctgcgg gtcctgcgc  
180

acgcccggc cgaaaccggc cggggccagc agccctgcgc ccaggacggc gctgcagccg  
240

caggagtcgg tggcgccggg gcgcggcgag gcggcggtcg acaaaaactca cacatgccca  
300

ccgtgcccag cacctgaact cctgggggga ccgtcagtct tcctttccc cccaaaaccc  
360

aaggacaccc tcatgatctc ccggacccct gaggtcacat gcgtggtggt ggacgtgagc  
420

cacgaagacc ctgaggtcaa gttcaactgg tacgtggacg gcgtggaggt gcataatgcc  
480

aagacaaaagc cgcgggagga gcagtacaac agcacgtacc gtgtggtcag cgtccctcacc  
540

gtcctgcacc aggactggct gaatggcaag gagtacaagt gcaaggtctc caacaaagcc  
600

ctccccagccc ccatcgagaa aaccatctcc aaagccaaag ggcagccccg agaaccacag  
660

gtgtacaccc tgccccatc ccggatgag ctgaccaaga accaggtcag cctgacacctgc  
720

ctggtaaaag gcttctatcc cagcgacatc gccgtggagt gggagagcaa tggcagccg  
780

gagaacaact acaagaccac gcctccgtg ttggactccg acggctcctt ctccctctac  
840

agcaagctca ccgtggacaa gagcaggtgg cagcagggga acgtcttctc atgtccgtg  
900

atgcatgagg ctctgcacaa ccactacacg cagaagagcc tctccctgtc tcccggaaa  
960

tga  
963

<210> 50

<211> 320

<212> PRT

<213> Homo sapiens

<400> 50

Met Glu Thr Asp Thr Leu Leu Leu Trp Val Leu Leu Trp Val Pro  
1 5 10 15

Gly Ser Thr Gly Asp Val Arg Arg Gly Pro Arg Ser Leu Arg Gly Arg

20

25

30

Asp Ala Pro Ala Pro Thr Pro Cys Val Pro Ala Glu Cys Phe Asp Leu  
 35 40 45

Leu Val Arg His Cys Val Ala Cys Gly Leu Leu Arg Thr Pro Arg Pro  
 50 55 60

Lys Pro Ala Gly Ala Ser Ser Pro Ala Pro Arg Thr Ala Leu Gln Pro  
 65 70 75 80

Gln Glu Ser Val Gly Ala Gly Glu Ala Ala Val Asp Lys Thr  
 85 90 95

His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser  
 100 105 110

Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg  
 115 120 125

Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro  
 130 135 140

Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala  
 145 150 155 160

Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val  
 165 170 175

Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr  
 180 185 190

Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr  
 195 200 205

Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu  
 210 215 220

Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys  
 225 230 235 240

Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser  
 245 250 255

Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp  
 260 265 270

Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser  
 275 280 285

Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala  
 290 295 300

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys  
 305 310 315 320

<210> 51

<211> 107

<212> PRT

<213> Homo sapiens

<400> 51  
Asp Ile Gln Met Thr Gln Thr Pro Ser Thr Leu Ser Ala Ser Val Gly  
1 5 10 15  
Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr  
20 25 30  
Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile  
35 40 45  
Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro  
65 70 75 80  
Asp Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp  
85 90 95  
Thr Phe Gly Gln Gly Thr Lys Val Glu Val Lys  
100 105

<210> 52  
<211> 107  
<212> PRT  
<213> Mus musculus

<400> 52  
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly  
1 5 10 15  
Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr  
20 25 30  
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Ile Val Lys Leu Leu Ile  
35 40 45  
Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln  
65 70 75 80  
Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp  
85 90 95  
Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
100 105

<210> 53  
<211> 119  
<212> PRT  
<213> Homo sapiens

<400> 53  
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15  
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr  
20 25 30

Leu Ile Glu Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile  
35 40 45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe  
50 55 60

Lys Gly Arg Val Thr Leu Thr Val Asp Glu Ser Thr Asn Thr Ala Tyr  
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys  
85 90 95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Gln Gly  
100 105 110

Thr Leu Val Thr Val Ser Ser  
115

<210> 54

<211> 119

<212> PRT

<213> Mus musculus

<400> 54  
Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Gly Pro Gly Thr  
1 5 10 15

Ser Val Arg Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr  
20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile  
35 40 45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe  
50 55 60

Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Thr Thr Ala Tyr  
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys  
85 90 95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Arg Gly  
100 105 110

Thr Leu Val Thr Val Ser Ala  
115

<210> 55

<211> 214

<212> PRT

<213> Homo sapiens

<400> 55  
Asp Ile Gln Met Thr Gln Thr Pro Ser Thr Leu Ser Ala Ser Val Gly  
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr  
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Ile

35

40

45

Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60

Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro  
 65 70 75 80

Asp Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp  
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Val Lys Arg Thr Val Ala Ala  
 100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly  
 115 120 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala  
 130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln  
 145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser  
 165 170 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr  
 180 185 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser  
 195 200 205

Phe Asn Arg Gly Glu Cys  
 210

<210> 56

<211> 448

<212> PRT

<213> Homo sapiens

<400> 56

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
 1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr  
 20 25 30

Leu Ile Glu Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile.  
 35 40 45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe  
 50 55 60

Lys Gly Arg Val Thr Leu Thr Val Asp Glu Ser Thr Asn Thr Ala Tyr  
 65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys  
 85 90 95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Gln Gly  
 100 105 110

Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe  
 115 120 125  
 Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu  
 130 135 140  
 Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp  
 145 150 155 160  
 Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu  
 165 170 175  
 Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser  
 180 185 190  
 Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro  
 195 200 205  
 Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys  
 210 215 220  
 Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro  
 225 230 235 240  
 Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser  
 245 250 255  
 Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp  
 260 265 270  
 Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn  
 275 280 285  
 Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val  
 290 295 300  
 Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu  
 305 310 315 320  
 Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys  
 325 330 335  
 Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr  
 340 345 350  
 Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr  
 355 360 365  
 Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu  
 370 375 380  
 Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu  
 385 390 395 400  
 Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys  
 405 410 415  
 Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu  
 420 425 430

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly  
435 440 445

<210> 57  
<211> 8540  
<212> DNA  
<213> Homo sapiens

<400> 57  
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aggccgaggg gcgcctcgcc tctgcataaa taaaaaaaaaat tagtcagcca tgcatgggc  
120

ggagaatggg cggaactggg cggagtttagg qgcggggatgg gcggagtttag gggcgggact  
180

atggttgctg actaatttagat atgcattgtt tgcatacttc tgcctgctgg ggagcctggg  
240

gactttcac acctgggtgc tgactaattt agatgcattgc tttgcataact tctgcctgct  
300

ggggagcctg gggactttcc acaccctaac tgacacacat tccacacaat taattccct  
360

agttatataat agtaatcaat tacgggtca tttagttcata gcccatatat ggagttccgc  
420

gttacataac ttacggtaaa tggcccgct ggctgaccgc ccaacgaccc cggcccatgg  
480

acgtcaataa tgacgtatgt tcccatagta acgccaatag ggactttcca ttgacgtcaa  
540

tgggtggact atttacggta aactgcccac ttggcagttac atcaagtgtt tcatatgcca  
600

agtacgcccc ctattgacgt caatgacggt aaatggcccg cctggcatta tgcccagttac  
660

atgacccttat gggactttcc tacttggcag tacatctacg tattagtcattt cgctattacc  
720

atgggtatgc gttttggca gtacatcaat gggcgtggat agcggtttga ctcacggggaa  
780

tttccaagtc tccacccat tgacgtcaat gggagtttgt tttggcacca aaatcaacgg  
840

gactttccaa aatgtcgtaa caactccgcc ccattgacgc aaatggcgg taggcgtgtt  
900

cgggtggagg tctatataag cagagctggg tacgtgaacc gtcagatgc ctggagacgc  
960

catcacagat ctctcaccat gagggtcccc gctcagctcc tggggctctt gctgcctgg  
1020

ctcccaggtg cacgatgtga tggtaccaag gtggaaatca aacgtacggt ggctgcacca  
1080

tctgtcttca tcttcccgcc atctgatgag cagttgaaat ctggaactgc ctctgttg  
1140

tgcctgctga ataacttcta tcccagagag gccaaagtac agtggaaagg ggataacgcc  
1200

ctccaatcgg gtaactccca ggagagtgtc acagagcagg acagcaagga cagcacctac  
1260

agcctcagca gcaccctgac gctgagcaaa gcagactacg agaaacacaa agtctacgcc  
1320

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1380

tgttgaattc agatccgtta acggttacca actacctaga ctggattcgt gacaacatgc  
1440

ggccgtgata tctacgtatg atcagcctcg actgtgcctt cttagttgcc a cccatctgtt  
1500

gtttgccttccccgtgcs ttccattgacc ctggaagggtg ccactccac tgtcccttcc  
1560

taataaaaatg aggaaattgc atcgcattgt ctgagtaggt gtcattctat tctgggggt  
1620

gggggtggggc aggacagcaa gggggaggat tgggaagaca atagcaggca tgctggggat  
1680

gcgggtgggct ctatggaacc agctgggct cgacagctat gccaagtacg cccctattg  
1740

acgtcaatga cggtaaatgg cccgcctggc attatgcccgtt acatgacc ttatggact  
1800

ttcctacttg gcagtacatc tacgtatttag tcatcgctat taccatggtg atgcggtttt  
1860

ggcagtgatcat caatgggcgt ggatagcggt ttgactcacg gggatttcca agtctccacc  
1920

ccattgacgt caatgggagt ttgtttggc accaaaatca acgggacttt ccaaaatgtc  
1980

gtaacaactc cgccccattg acgcaaattgg gcggtaggcg tgtacggtgg gaggtctata  
2040

taagcagagc tgggtacgtc ctcacattca gtgatcagca ctgaacacag acccgatcgac  
2100

atgggttggc gcctcatctt gctttccctt gtcgctgttgc ctacgcgtgt cgctagcacc  
2160

aaggggccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg gggcacagcg  
2220

gcccctgggct gcctggtcaa ggactacttc cccgaaccgg tgacggcgcc gtggaaacctaa  
2280

ggcgcctgtga ccagcggcgt gcacaccccttc ccggctgtcc tacagtccctc aggactctac  
2340

tccctcagca gctgtggtgac cgtgccctcc agcagcttgg gcaccaggac ctacatctgc  
2400

aacgtgaatc acaagccccag caacaccaag gtggacaaga aagcagagcc caaatcttgt  
2460

gacaaaaactc acacatgccc accgtgccc gcacctgaac tcctgggggg accgtcagtc  
2520

ttcctcttcc cccaaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca  
2580

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac  
2640

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac  
2700

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggactacaag  
2760

tgcaaggctt ccaacaaagc cctccagcc cccatcgaga aaaccatctc caaagccaaa  
2820

gggcagcccc gagaaccaca ggtgtacacc ctgccccat cccggatga gctgaccagg  
2880

aaccaggta cgcgtgacccg cctggtaaaa ggcttctatc ccagcgacat cgccgtggag  
2940

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctccgt gctggactcc  
3000

gacggcttct tttccctcta cagcaagctc accgtggaca agagcaggta gcagcagggg  
3060

aacgtcttct catgtccgt gatgtacccat gctctgcaca accactacac gcagaagagc  
3120

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7500

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7680

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7740

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7800

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8160

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8280

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8340

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8400

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cttgcggc gtaatacgg gataataccg cggccacatag cagaacttta aaagtgcgtca  
8880

tcattggaaa acgttctcg gggcgaaaac totcaaggat cttaccgtg ttgagatcca  
8940

gttcgatgta acccactcg gcacccaaact gatcttcagc atctttact ttcaccagcg  
9000

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9060

ggaaaatgtt aataactcata ctcttccttt ttcaatattt ttgaagcatt tatcagggtt  
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9209

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<211> 384  
<212> DNA  
<213> Mus musculus

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120

gtcacaatga cttgcagggc cagtcaggat gtaagttaca tccactgggtt ccagcagaag  
180

ccaggatctt ccccaaacc ctggattttt gccacatcca acctggttt tggagtccct  
240

gttcgcttca gtggcagtgg gtctggact tcttacttcc tcacaatcag cagagtggag  
300

gctgaagatg ctgccactta ttactgccag cagtggacta gtaacccacc cacgttcgga  
360

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384

<210> 60  
<211> 128  
<212> PRT  
<213> Mus musculus

<400> 60  
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Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile  
20 25 30

Leu Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser  
35 40 45

Ser Ser Val Ser Tyr Ile His Trp Phe Gln Gln Lys Pro Gly Ser Ser  
50 55 60

Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro  
65 70 75 80

Val Arg Phe Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile  
85 90 95

Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp  
100 105 110

Thr Ser Asn Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
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<210> 61  
<211> 420  
<212> DNA  
<213> Mus musculus

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180  
ggtcggggcc tggaaatggat tggagctatt tatcccgaa atggtgatac ttccatcaat  
240  
cagaagg tca aaggcaaggc cacattgact gcagacaaat cctccagcac agcctacatg  
300  
cagctcagca gcctgacatc tgaggactct gcggcttatt actgtgcaag atcgacttac  
360  
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420

<210> 62  
<211> 140  
<212> PRT  
<213> Mus musculus

<400> 62  
Met Gly Trp Ser Leu Ile Leu Leu Phe Leu Val Ala Val Ala Thr Arg  
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Val Leu Ser Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys  
20 25 30  
Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
35 40 45  
Thr Ser Tyr Asn Met His Trp Val Lys Gln Thr Pro Gly Arg Gly Leu  
50 55 60  
Glu Trp Ile Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn  
65 70 75 80  
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser  
85 90 95  
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val  
100 105 110  
Tyr Tyr Cys Ala Arg Ser Thr Tyr Tyr Gly Gly Asp Trp Tyr Phe Asn  
115 120 125  
Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ala

130

135

140

<210> 63  
<211> 1395  
<212> DNA  
<213> Homo sapiens

<400> 63.  
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120

acagccaagc cgccggacat tcccatgaat cccatgtgca tttaccgctc cccggagaag  
180

aaggcaactg aggtgaggg ctcagaacag aagatcccgg aggccaccaa ccggcggtgc  
240

tgggaactgt ccaaggccaa ttcccgctt gctaccactt tctatcagca cctggcagat  
300

tccagaatg acaatgataa cattttcctg tcacccctga gtatctccac ggcttttgtct  
360

atgaccaagc tgggtgcctg taatgacacc ctccagcaac tggatggaggt atttaagttt  
420

gacaccatat ctgagaaaac atctgatcag atccacttct ttttgccaa actgaactgc  
480

cgactctatac gaaaagccaa caaatccctcc aagtttagtat cagccaatcg ctttttgga  
540

gacaaatccc ttaccttcaa tgagacctac caggacatca gtgagtttgtt atatggagcc  
600

aagctccagc ccctggactt caaggaaaat gcagagcaat ccagageggc catcaacaaa  
660

tgggtgtcca ataagaccga aggccgaatc accgatgtca tccctcgga agccatcaat  
720

gagctcactg ttctggtgct ggttaacacc atttacttca agggcctgtg gaagtcaaag  
780

ttcagccctg agaacacaag gaaggaactg ttctacaagg ctgatggaga gtctgttca  
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gcacatcatga tgtaccagga aggcaagttc cgttatcggc gcgtggctga aggcacccag  
900

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960

gagaagagcc tggccaaggt ggagaaggaa ctcaccccaag aggtgctgca ggagtggctg  
1020

gatgaattgg aggagatgat gctggtggtc cacatgcccc gcttccgcac tgaggacggc  
1080

ttcagtttga aggaggcgt gcaagacatg ggcccttgtcg atctgttcag ccctgaaaag  
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1200

cataaggcat ttcttgaggt aaatgaagaa ggcagtgaag cagctgcaag taccgctgtt  
1260

gtgattgctg gccgttcgt aaaccccaac agggtgactt tcaaggccaa caggccttcc  
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<210> 64  
<211> 464  
<212> PRT  
<213> Homo sapiens

<400> 64  
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Tyr Leu Leu Ser Leu Leu Ile Gly Phe Trp Asp Cys Val Thr Cys  
20 25 30

His Gly Ser Pro Val Asp Ile Cys Thr Ala Lys Pro Arg Asp Ile Pro  
35 40 45

Met Asn Pro Met Cys Ile Tyr Arg Ser Pro Glu Lys Lys Ala Thr Glu  
50 55 60

Asp Glu Gly Ser Glu Gln Lys Ile Pro Glu Ala Thr Asn Arg Arg Val  
65 70 75 80

Trp Glu Leu Ser Lys Ala Asn Ser Arg Phe Ala Thr Thr Phe Tyr Gln  
85 90 95

His Leu Ala Asp Ser Lys Asn Asp Asn Asp Asn Ile Phe Leu Ser Pro  
100 105 110

Leu Ser Ile Ser Thr Ala Phe Ala Met Thr Lys Leu Gly Ala Cys Asn  
115 120 125

Asp Thr Leu Gln Gln Leu Met Glu Val Phe Lys Phe Asp Thr Ile Ser  
130 135 140

Glu Lys Thr Ser Asp Gln Ile His Phe Phe Ala Lys Leu Asn Cys  
145 150 155 160

Arg Leu Tyr Arg Lys Ala Asn Lys Ser Ser Lys Leu Val Ser Ala Asn  
165 170 175

Arg Leu Phe Gly Asp Lys Ser Leu Thr Phe Asn Glu Thr Tyr Gln Asp  
180 185 190

Ile Ser Glu Leu Val Tyr Gly Ala Lys Leu Gln Pro Leu Asp Phe Lys  
 195 200 205

Glu Asn Ala Glu Gln Ser Arg Ala Ala Ile Asn Lys Trp Val Ser Asn  
 210 215 220

Lys Thr Glu Gly Arg Ile Thr Asp Val Ile Pro Ser Glu Ala Ile Asn  
 225 230 235 240

Glu Leu Thr Val Leu Val Leu Val Asn Thr Ile Tyr Phe Lys Gly Leu  
 245 250 255

Trp Lys Ser Lys Phe Ser Pro Glu Asn Thr Arg Lys Glu Leu Phe Tyr  
 260 265 270

Lys Ala Asp Gly Glu Ser Cys Ser Ala Ser Met Met Tyr Gln Glu Gly  
 275 280 285

Lys Phe Arg Tyr Arg Arg Val Ala Glu Gly Thr Gln Val Leu Glu Leu  
 290 295 300

Pro Phe Lys Gly Asp Asp Ile Thr Met Val Leu Ile Leu Pro Lys Pro  
 305 310 315 320

Glu Lys Ser Leu Ala Lys Val Glu Lys Glu Leu Thr Pro Glu Val Leu  
 325 330 335

Gln Glu Trp Leu Asp Glu Leu Glu Glu Met Met Leu Val Val His Met  
 340 345 350

Pro Arg Phe Arg Ile Glu Asp Gly Phe Ser Leu Lys Glu Gln Leu Gln  
 355 360 365

Asp Met Gly Leu Val Asp Leu Phe Ser Pro Glu Lys Ser Lys Leu Pro  
 370 375 380

Gly Ile Val Ala Glu Gly Arg Asp Asp Leu Tyr Val Ser Asp Ala Phe  
 385 390 395 400

His Lys Ala Phe Leu Glu Val Asn Glu Glu Gly Ser Glu Ala Ala Ala  
 405 410 415

Ser Thr Ala Val Val Ile Ala Gly Arg Ser Leu Asn Pro Asn Arg Val  
 420 425 430

Thr Phe Lys Ala Asn Arg Pro Phe Leu Val Phe Ile Arg Glu Val Pro  
 435 440 445

Leu Asn Thr Ile Ile Phe Met Gly Arg Val Ala Asn Pro Cys Val Lys  
 450 455 460

<210> 65  
<211> 1962  
<212> DNA  
<213> Homo sapiens

<400> 65  
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120

tggccctgc ggcgttctg gaggagcaca ggcttctgcc ccccgctgcc acacagccag  
180

gctgaccagt acgtcctcag ctgggaccag cagctcaacc tcgcctatgt gggcgccgtc  
240

cctcaccgcg gcatcaagca ggtccggacc cactggctgc tggagcttgt caccaccagg  
300

gggtccactg gacggggct gagctacaac ttcacccacc tggacggta cttggacatt  
360

ctcaggaga accagctcct cccagggttt gagctgatgg gcagcgcctc gggccacttc  
420

actgactttg aggacaagca gcaggtgttt gagtggaagg acttggtctc cagcctggcc  
480

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540

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1080

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ctctggcccg aagtgtcgca ggccgggacc gtccatggaca gcaaccacac ggtggccgtc  
1260

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1500

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1560

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1620

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1680

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1740

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1800

accttcaacc tctttgtgtt cagccagac acaggtgctg tctctggctc ctaccgagtt  
1860

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1920

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1962

<210> 66

<211> 653

<212> PRT

<213> Homo sapiens

<400> 66

Met Arg Pro Leu Arg Pro Arg Ala Ala Leu Leu Ala Leu Leu Ala Ser  
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Leu Leu Ala Ala Pro Pro Val Ala Pro Ala Glu Ala Pro His Leu Val  
20 25 30

Gln Val Asp Ala Ala Arg Ala Leu Trp Pro Leu Arg Arg Phe Trp Arg  
35 40 45

Ser Thr Gly Phe Cys Pro Pro Leu Pro His Ser Gln Ala Asp Gln Tyr  
50 55 60

Val Leu Ser Trp Asp Gln Gln Leu Asn Leu Ala Tyr Val Gly Ala Val  
65 70 75 80

Pro His Arg Gly Ile Lys Gln Val Arg Thr His Trp Leu Leu Glu Leu  
85 90 95

Val Thr Thr Arg Gly Ser Thr Gly Arg Gly Leu Ser Tyr Asn Phe Thr

|   |     |     |
|---|-----|-----|
| 100   | 105 | 110 |
| His Leu Asp Gly Tyr Leu Asp Leu Leu Arg Glu Asn Gln Leu Leu Pro |     |     |
| 115   | 120 | 125 |
| Gly Phe Glu Leu Met Gly Ser Ala Ser Gly His Phe Thr Asp Phe Glu |     |     |
| 130   | 135 | 140 |
| Asp Lys Gln Gln Val Phe Glu Trp Lys Asp Leu Val Ser Ser Leu Ala |     |     |
| 145   | 150 | 155 |
| Arg Arg Tyr Ile Gly Arg Tyr Gly Leu Ala His Val Ser Lys Trp Asn |     |     |
| 165   | 170 | 175 |
| Phe Glu Thr Trp Asn Glu Pro Asp His His Asp Phe Asp Asn Val Ser |     |     |
| 180   | 185 | 190 |
| Met Thr Met Gln Gly Phe Leu Asn Tyr Tyr Asp Ala Cys Ser Glu Gly |     |     |
| 195   | 200 | 205 |
| Leu Arg Ala Ala Ser Pro Ala Leu Arg Leu Gly Gly Pro Gly Asp Ser |     |     |
| 210   | 215 | 220 |
| Phe His Thr Pro Pro Arg Ser Pro Leu Ser Trp Gly Leu Leu Arg His |     |     |
| 225   | 230 | 235 |
| Cys His Asp Gly Thr Asn Phe Phe Thr Gly Glu Ala Gly Val Arg Leu |     |     |
| 245   | 250 | 255 |
| Asp Tyr Ile Ser Leu His Arg Lys Gly Ala Arg Ser Ser Ile Ser Ile |     |     |
| 260   | 265 | 270 |
| Leu Glu Gln Glu Lys Val Val Ala Gln Gln Ile Arg Gln Leu Phe Pro |     |     |
| 275   | 280 | 285 |
| Lys Phe Ala Asp Thr Pro Ile Tyr Asn Asp Glu Ala Asp Pro Leu Val |     |     |
| 290   | 295 | 300 |
| Gly Trp Ser Leu Pro Gln Pro Trp Arg Ala Asp Val Thr Tyr Ala Ala |     |     |
| 305   | 310 | 315 |
| Met Val Val Lys Val Ile Ala Gln His Gln Asn Leu Leu Ala Asn     |     |     |
| 325   | 330 | 335 |
| Thr Thr Ser Ala Phe Pro Tyr Ala Leu Leu Ser Asn Asp Asn Ala Phe |     |     |
| 340   | 345 | 350 |
| Leu Ser Tyr His Pro His Pro Phe Ala Gln Arg Thr Leu Thr Ala Arg |     |     |
| 355   | 360 | 365 |
| Phe Gln Val Asn Asn Thr Arg Pro Pro His Val Gln Leu Leu Arg Lys |     |     |
| 370   | 375 | 380 |
| Pro Val Leu Thr Ala Met Gly Leu Leu Ala Leu Leu Asp Glu Glu Gln |     |     |
| 385   | 390 | 395 |
| Leu Trp Ala Glu Val Ser Gln Ala Gly Thr Val Leu Asp Ser Asn His |     |     |
| 405   | 410 | 415 |
| Thr Val Gly Val Leu Ala Ser Ala His Arg Pro Gln Gly Pro Ala Asp |     |     |
| 420   | 425 | 430 |

Ala Trp Arg Ala Ala Val Leu Ile Tyr Ala Ser Asp Asp Thr Arg Ala  
 435 440 445

His Pro Asn Arg Ser Val Ala Val Thr Leu Arg Leu Arg Gly Val Pro  
 450 455 460

Pro Gly Pro Gly Leu Val Tyr Val Thr Arg Tyr Leu Asp Asn Gly Leu  
 465 470 475 480

Cys Ser Pro Asp Gly Glu Trp Arg Arg Leu Gly Arg Pro Val Phe Pro  
 485 490 495

Thr Ala Glu Gln Phe Arg Arg Met Arg Ala Ala Glu Asp Pro Val Ala  
 500 505 510

Ala Ala Pro Arg Pro Leu Pro Ala Gly Gly Arg Leu Thr Leu Arg Pro  
 515 520 525

Ala Leu Arg Leu Pro Ser Leu Leu Leu Val His Val Cys Ala Arg Pro  
 530 535 540

Glu Lys Pro Pro Gly Gln Val Thr Arg Leu Arg Ala Leu Pro Leu Thr  
 545 550 555 560

Gln Gly Gln Leu Val Leu Val Trp Ser Asp Glu His Val Gly Ser Lys  
 565 570 575

Cys Leu Trp Thr Tyr Glu Ile Gln Phe Ser Gln Asp Gly Lys Ala Tyr  
 580 585 590

Thr Pro Val Ser Arg Lys Pro Ser Thr Phe Asn Leu Phe Val Phe Ser  
 595 600 605

Pro Asp Thr Gly Ala Val Ser Gly Ser Tyr Arg Val Arg Ala Leu Asp  
 610 615 620

Tyr Trp Ala Arg Pro Gly Pro Phe Ser Asp Pro Val Pro Tyr Leu Glu  
 625 630 635 640

Val Pro Val Pro Arg Gly Pro Pro Ser Pro Gly Asn Pro  
 645 650

<210> 67

<211> 1290

<212> DNA

<213> Homo sapiens

<400> 67

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 120

accatggctt ggctgcactg ggagcgcttc atgtgcaacc ttgactgcca ggaagagcca  
 180

gattccttgca tcagttagaa gctcttcatg gagatggcag agctcatggc ctcagaaggc  
 240

tggaaaggatg caggttatga gtacotctgc attgatgact gttggatggc tcccaaaga  
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360

gctaattatg ttcacagcaa aggactgaag ctagggattt atgcagatgt tggaaataaa  
420

acctgcgcag gctccctgg gagtttgga tactacgaca ttgatgocca gacctttgct  
480

gactggggag tagatctgct aaaatttgat ggttgttact gtgacagttt ggaaaatttg  
540

gcagatggtt ataaggcacat gtcctggcc ctgaatagga ctggcagaag cattgtgtac  
600

tccgtgagt ggcctttta tatgtggccc tttcaaaagc ccaattatac agaaatccga  
660

cagtactgca atcactggcg aaattttgct gacattgatg attcctggaa aagtataaaag  
720

agtatcttgg actggacatc ttttaaccag gagagaattt ttgatgttgc tggaccaggg  
780

ggttggaatg acccagatat gtttgttgc ggcaactttg gcctcagctg gaatcagcaa  
840

gtaactcaga tggccctctg ggctatcatg gctgctcctt tattcatgtc taatgacctc  
900

cgacacatca gccctcaagc caaagctctc cttcaggata aggacgtaat tgccatcaat  
960

caggaccct tggcaagca agggtaccag cttagacagg gagacaactt tgaagtgtgg  
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gaacgacctc tctcaggctt agcctggct gtagctatga taaaccggca ggagattgg  
1080

ggacctcgct cttataccat cgctttgttgc tccctggta aaggagtggc ctgtatcc  
1140

gcctgttca tcacacagct cctccctgtg aaaaggaagc tagggttcta tgaatggact  
1200

tcaaggtaa gaagtcacat aaatcccaca ggcactgttt tgcttcagct agaaaataca  
1260

atgcagatgt cattaaaaga cttactttaa  
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<210> 68

<211> 429

<212> PRT

<213> Homo sapiens

<400> 68

Met Gln Leu Arg Asn Pro Glu Leu His Leu Gly Cys Ala Leu Ala Leu

Arg Phe Leu Ala Leu Val Ser Trp Asp Ile Pro Gly Ala Arg Ala Leu  
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Asp Asn Gly Leu Ala Arg Thr Pro Thr Met Gly Trp Leu His Trp Glu  
 35 40 45

Arg Phe Met Cys Asn Leu Asp Cys Gln Glu Glu Pro Asp Ser Cys Ile  
 50 55 60

Ser Glu Lys Leu Phe Met Glu Met Ala Glu Leu Met Val Ser Glu Gly  
 65 70 75 80

Trp Lys Asp Ala Gly Tyr Glu Tyr Leu Cys Ile Asp Asp Cys Trp Met  
 85 90 95

Ala Pro Gln Arg Asp Ser Glu Gly Arg Leu Gln Ala Asp Pro Gln Arg  
 100 105 110

Phe Pro His Gly Ile Arg Gln Leu Ala Asn Tyr Val His Ser Lys Gly  
 115 120 125

Leu Lys Leu Gly Ile Tyr Ala Asp Val Gly Asn Lys Thr Cys Ala Gly  
 130 135 140

Phe Pro Gly Ser Phe Gly Tyr Tyr Asp Ile Asp Ala Gln Thr Phe Ala  
 145 150 155 160

Asp Trp Gly Val Asp Leu Leu Lys Phe Asp Gly Cys Tyr Cys Asp Ser  
 165 170 175

Leu Glu Asn Leu Ala Asp Gly Tyr Lys His Met Ser Leu Ala Leu Asn  
 180 185 190

Arg Thr Gly Arg Ser Ile Val Tyr Ser Cys Glu Trp Pro Leu Tyr Met  
 195 200 205

Trp Pro Phe Gln Lys Pro Asn Tyr Thr Glu Ile Arg Gln Tyr Cys Asn  
 210 215 220

His Trp Arg Asn Phe Ala Asp Ile Asp Asp Ser Trp Lys Ser Ile Lys  
 225 230 235 240

Ser Ile Leu Asp Trp Thr Ser Phe Asn Gln Glu Arg Ile Val Asp Val  
 245 250 255

Ala Gly Pro Gly Gly Trp Asn Asp Pro Asp Met Leu Val Ile Gly Asn  
 260 265 270

Phe Gly Leu Ser Trp Asn Gln Gln Val Thr Gln Met Ala Leu Trp Ala  
 275 280 285

Ile Met Ala Ala Pro Leu Phe Met Ser Asn Asp Leu Arg His Ile Ser  
 290 295 300

Pro Gln Ala Lys Ala Leu Leu Gln Asp Lys Asp Val Ile Ala Ile Asn  
 305 310 315 320

Gln Asp Pro Leu Gly Lys Gln Gly Tyr Gln Leu Arg Gln Gly Asp Asn  
 325 330 335

Phe Glu Val Trp Glu Arg Pro Leu Ser Gly Leu Ala Trp Ala Val Ala  
340 345 350

Met Ile Asn Arg Gln Glu Ile Gly Gly Pro Arg Ser Tyr Thr Ile Ala  
355 360 365

Val Ala Ser Leu Gly Lys Gly Val Ala Cys Asn Pro Ala Cys Phe Ile  
370 375 380

Thr Gln Leu Leu Pro Val Lys Arg Lys Leu Gly Phe Tyr Glu Trp Thr  
 385                   390                   395                   400

Ser Arg Leu Arg Ser His Ile Asn Pro Thr Gly Thr Val Leu Leu Glu  
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Leu Glu Asn Thr Met Gln Met Ser Leu Lys Asp Leu Leu  
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<210> 69

<211> 351

<212> DNA

<213> Homo sapiens

<400> 69

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120

2

tatccatc cactaaatgc caagaagacca atattttatcc aaaagaacgt cacctcaqag

240 *Leucostoma corynorhini* *Leucostoma testaceum* *Leucostoma tigrinum*

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<210> 70  
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**<212>** PBT

(212) PRT  
(213) Hom

<213> HOMO sapiens

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Met Asp Tyr Tyr Arg Lys Tyr Ile Val Ile Thr 15

Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gin Asp Cys Ile  
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Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Phe Gly Ala Pro  
35 40 45

Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro  
50 55 60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu  
 65 70 75 80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly  
 85 90 95

Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr  
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Tyr His Lys Ser  
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<210> 71

<211> 498

<212> DNA

<213> Homo sapiens

<400> 71

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 120

gagggctgcc ccgtgtgcat caccgtcaac accaccatct gtgcggctta ctgccccacc  
 180

atgaccgcgc tgctgcaggg ggtcctgccc gcccctgcctc aggtgggtgtg caactaccgc  
 240

gatgtgcgtct tcgagtccat ccggctccct ggctgcccgc gcggcgtgaa ccccggtggc  
 300

tcctacgcgc tggctctcag ctgtcaatgt gcaactctgcc gccgcagcac cactgactgc  
 360

gggggtccca aggaccaccc cttgacctgt gatgacccccc gttccagga ctccctttcc  
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<210> 72

<211> 165

<212> PRT

<213> Homo sapiens

<400> 72

Met Glu Met Phe Gln Gly Leu Leu Leu Leu Leu Leu Ser Met Gly  
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Gly Thr Trp Ala Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile  
 20 25 30

Asn Ala Thr Leu Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr  
 35 40 45

Val Asn Thr Thr Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val

50

55

60

Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg  
 65 70 75 80

Asp Val Arg Phe Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val  
 85 90 95

Asn Pro Val Val Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu  
 100 105 110

Cys Arg Arg Ser Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu  
 115 120 125

Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser Ser Lys Ala Pro  
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Pro Pro Ser Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr  
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Pro Ile Leu Pro Gln  
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<210> 73

<211> 165

<212> PRT

<213> Homo sapiens

<400> 73  
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Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His  
 20 25 30

Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe  
 35 40 45

Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp  
 50 55 60

Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu  
 65 70 75 80

Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp  
 85 90 95

Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu  
 100 105 110

Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala  
 115 120 125

Pro Leu Arg Thr Ile Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val  
 130 135 140

Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala  
 145 150 155 160

Cys Arg Thr Gly Asp  
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<210> 74  
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<212> DNA  
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ctgcaccaaa tgaggagaat ctccccttc ttgtgtctca aggacagaag agacttcagg  
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ttcccccagg agatggtaaa agggagccag ttgcagaagg cccatgtcat gtctgtcctc  
240

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300

aacatgaccc tccttagacca actccacact ggacttcatc agcaactgca acacctggag  
360

acctgcttgc tgcaggtagt gggagaagga gaatctgctg gggcaattag cagccotgca  
420

ctgaccttga ggaggtactt ccagggaaatc cgtgtctacc tgaaagagaa gaaatacagc  
480

gactgtgcct gggaaagtgt cagaatggaa atcatgaaat cttgttctt atcaacaaac  
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<210> 75  
<211> 195  
<212> PRT  
<213> Homo sapiens

<400> 75  
Met Ala Leu Leu Phe Pro Leu Leu Ala Ala Leu Val Met Thr Ser Tyr  
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Ser Pro Val Gly Ser Leu Gly Cys Asp Leu Pro Gln Asn His Gly Leu  
20 25 30

Leu Ser Arg Asn Thr Leu Val Leu Leu His Gln Met Arg Arg Ile Ser  
35 40 45

Pro Phe Leu Cys Leu Lys Asp Arg Arg Asp Phe Arg Phe Pro Gln Glu  
50 55 60

Met Val Lys Gly Ser Gln Leu Gln Lys Ala His Val Met Ser Val. Leu  
65 70 75 80

His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe His Thr Glu Arg Ser  
85 90 95

Ser Ala Ala Trp Asn Met Thr Leu Leu Asp Gln Leu His Thr Gly Leu  
100 105 \* 110

His Gln Gln Leu Gln His Leu Glu Thr Cys Leu Leu Gln Val Val Gly  
115 120 125

Glu Gly Glu Ser Ala Gly Ala Ile Ser Ser Pro Ala Leu Thr Leu Arg  
130 135 140

Arg Tyr Phe Gln Gly Ile Arg Val Tyr Leu Lys Glu Lys Lys Tyr Ser  
145 150 155 160

Asp Cys Ala Trp Glu Val Val Arg Met Glu Ile Met Lys Ser Leu Phe  
165 170 175

Leu Ser Thr Asn Met Gln Glu Arg Leu Arg Ser Lys Asp Arg Asp Leu  
180 185 190

Gly Ser Ser  
195

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